

*Roofing*

**ANACONDA  
Economy  
COPPER ROOFING**

*Suggestions for  
INSTALLING*



**THE AMERICAN BRASS COMPANY**

GENERAL OFFICES • WATERBURY, CONNECTICUT

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Anaconda Publication C-7-I First Edition  
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# ANACONDA

## *Economy*

# COPPER ROOFING

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*Installation Suggestions  
and Specifications*



THE AMERICAN BRASS COMPANY  
GENERAL OFFICES: WATERBURY, CONNECTICUT

# ANACONDA *Economy* COPPER ROOFING

**I**N developing Anaconda Economy Copper Roofing primarily for residences and similar small roof areas, recognition was accorded to the fact that: 1. Standing seam construction for sheet metal roofing had proved both practical and economical; 2. Existing practice resulted in seam spacing too wide for small roofs; 3. The cost of standing seam 16-ounce copper was too high to permit of its widespread use for residential roofing.

Consequently, space between vertical seams was narrowed to  $13\frac{3}{4}$ " and the height of the

seams reduced to  $\frac{3}{4}$ ". This made possible the use of 10-ounce copper without sacrificing the strength, rigidity and wind resistance obtained from wider, thicker sheets, and at the same time brought the standing seams into the proper architectural scale for small buildings.

The use of lighter metal and its correspondingly greater workability, reduces cost to a point where Anaconda Economy Copper Roofing merits consideration wherever quality roofing is desired.

## Why this booklet?

Although the general principles of standing seam construction are well-known to the majority of contractors, we present a series of detail drawings based on proved methods followed by some of the most successful contractors in the field.

Much of the detail presented on the following pages may seem elementary, but it is the purpose of these drawings to illustrate every step in the application of Anaconda Economy Copper Roofing and at the same time to show workable methods of installing a standing seam copper roof without the use of solder.

This latter has been accomplished by taking advantage of the unusual workability of 10-ounce copper and the fact that a fold of several thicknesses is not unduly bulky. All the suggestions offered have been worked out in actual practice with 10-ounce metal and in general the procedures illustrated should also be applicable to 16-ounce copper.

For counsel and guidance, much credit is due the firms of Klein & Kavanagh, Inc., Nicholson & Galloway, and H. Klein and Sons, Inc. The method of presentation was conceived by Vahan Hagopian, A. I. A.

## In reading these drawings...

It will be noted that each page details a single operation only, and that steps already covered in previous drawings are not repeated. For this reason, it may become necessary to refer

back to an earlier drawing in order to clarify some operation. Small paper models of the folds illustrated may be helpful in developing progressive details.

## GENERAL INSTALLATION NOTES

**SLOPE OF ROOF**—In sections of the country having considerable snow, Anaconda Economy Copper Roofing should not be applied to slopes of less than 6 inches to the foot. In warm climates, where snow is not a problem, it is usually safe to use standing seam construction on slopes as low as 3 inches per foot. If there is the least question of water backing up over the cross seams, they can be waterproofed with white lead paste or other suitable plastic compounds.

**LAYOUT OF ROOF**—In cases where the house has some pronounced design feature, such as a main entrance with a section of roof above, or one or more dormer windows, it is usually possible to lay out a roof so that the position of the standing seams will be symmetrical. A little care exercised in determining accurate spacing and arrangement of both vertical and horizontal seams will enhance the beauty of the completed job.

**SHEATHING**—Boards should be laid solid without open joints, parallel to ridge. All nail heads should be driven home and the entire roof deck covered with 15-pound asphalt saturated felt.

**PRINCIPLES OF CONSTRUCTION**—No nails penetrate the sheets which are held in place by copper cleats fastened to the roof deck with copper nails. This construction provides for expansion and contraction of the metal due to temperature changes.

Cross section of the standing seam is sim-

ilar to a narrow, inverted V. To provide free lateral movement for the sheets, the seam should be formed with base spacing of at least  $\frac{1}{16}$ ".

Undue bulkiness at complicated seams is avoided by trimming the sheets as indicated in several of the drawings.

**VALLEYS AND FLASHINGS**—16-ounce copper is suggested for valleys and flashings because they are subjected to greater wear than the roof proper. In many instances however, the same 10-ounce copper as used for the roofing should give satisfactory results, but this procedure should be followed only after full consideration of the local conditions applying to each case.

**SIZE AND WEIGHT DATA**—Economy Copper Roofing is furnished in strips of 10-ounce copper, 16 inches wide and 6 feet long, packed flat in cases containing sufficient copper (48 sheets) to cover 3 squares of roof area. Weight of copper—approximately 240 pounds (80 pounds per square).

**TOOLS AND EQUIPMENT**—The same tools and shop equipment regularly used for standing seam roofing are employed for forming and applying Economy Copper Roofing. Pairs of double seamers (kickers) are available for  $\frac{3}{4}$ " as well as for 1" finished standing seams. If a pair of 1" seamers is already on hand, only one additional seamer ( $\frac{3}{4}$ ") is required to make the finished  $\frac{3}{4}$ " standing seam.

# SUGGESTED SPECIFICATIONS 10-OZ. ECONOMY COPPER ROOFING

## PREPARATION OF SURFACE

The roof boarding is to be laid solid without open joints and should be thoroughly inspected. All nails are to be driven home and imperfections in the boarding are to be repaired.

## FELT LINING

Furnish and apply a 15-pound asphalt saturated lining felt over the entire roof area before applying the copper. This is to be done in the usual manner, weather-lapping the edges at least 2 inches, and nailing with flat head copper roofing nails.

## COPPER

The roofing material is to be Anaconda 10-ounce Economy Copper Roofing, and shall be supplied in sheets 16" x 72", with parallel edges and square ends.

## SYSTEM OF CONSTRUCTION

The Economy Copper Roofing is to be applied according to the installation methods suggested in The American Brass Company's Publication C-7-I, or as approved by the architect, following the conventional standing seam system of construction, with the use of standard roofing tools which are made for the purpose. The seam spacing is to be laid out by means of chalk lines on the roof surface, centered so as to give an equal spacing at the ends, and must be approved by the Architect before the work is begun.

The roofing is to be installed without the use of solder, except in unusual instances where soldering is absolutely necessary to make flashing joints watertight.

The work of applying the copper roofing shall begin by fastening a copper edging strip to the roof at the eaves and verge (as shown by detail).

The copper roof pans are to have a  $1\frac{1}{4}$ " upstanding edge on one side and a 1-inch upstanding edge on the opposite side, these edges to be double locked with seaming tools to make a  $\frac{3}{4}$ -inch high finished seam with base

## SUGGESTED SPECIFICATIONS—Continued

spacing of at least  $\frac{1}{16}$ ". The end joints of the 72-inch pans are to consist of  $\frac{3}{4}$ -inch flat lock seams *without solder*.

The standing seams at the eaves and valleys, and as they approach a hip or ridge, are to be finished as shown by the details.

### VALLEYS

The valleys are to be 16-ounce (or 10-ounce) Anaconda Copper. They shall have  $\frac{3}{4}$ " edges turned back on each side. The end joints are to be made with at least 1" seams. They, as well as the joints with the roof pans, are to be single flat locks, *without solder*.

### FLASHING

Flash with 16-ounce (or 10-ounce) copper against all vertical surfaces, extending the flashings upward at least 4 inches. Where the flashing is against masonry, a copper counter flashing is to be installed with a 4-inch vertical face, as shown by detail or as approved by the architect.

### FASTENING

The edging strips are to be of lengths not exceeding 8 feet and they are to be installed with a  $\frac{1}{16}$ " clearance between the strips. The strips are to be fastened by solid nailing at intervals of 4 inches or less. The roof pans, valleys, etc., are to be fastened by means of  $\frac{1}{2}$ " x  $2\frac{3}{4}$ " 10-ounce copper cleats spaced not over 12 inches apart along each edge or seam, using two copper nails to each cleat, the end of the cleat folded over to cover the nail heads.

### NAILS

For all fastening of copper,  $\frac{7}{8}$ " No. 14 flat head copper roofing nails are to be used.

### MISCELLANEOUS

In general, the standing seams are to be rolled or locked in a right-hand direction, excepting at the valleys, where all seams are to be rolled away from the flow of water in the valley.

*Specifications for copper gutters, leaders and accessories can best be written to suit each particular job by referring to catalogs issued by manufacturers of those materials.*

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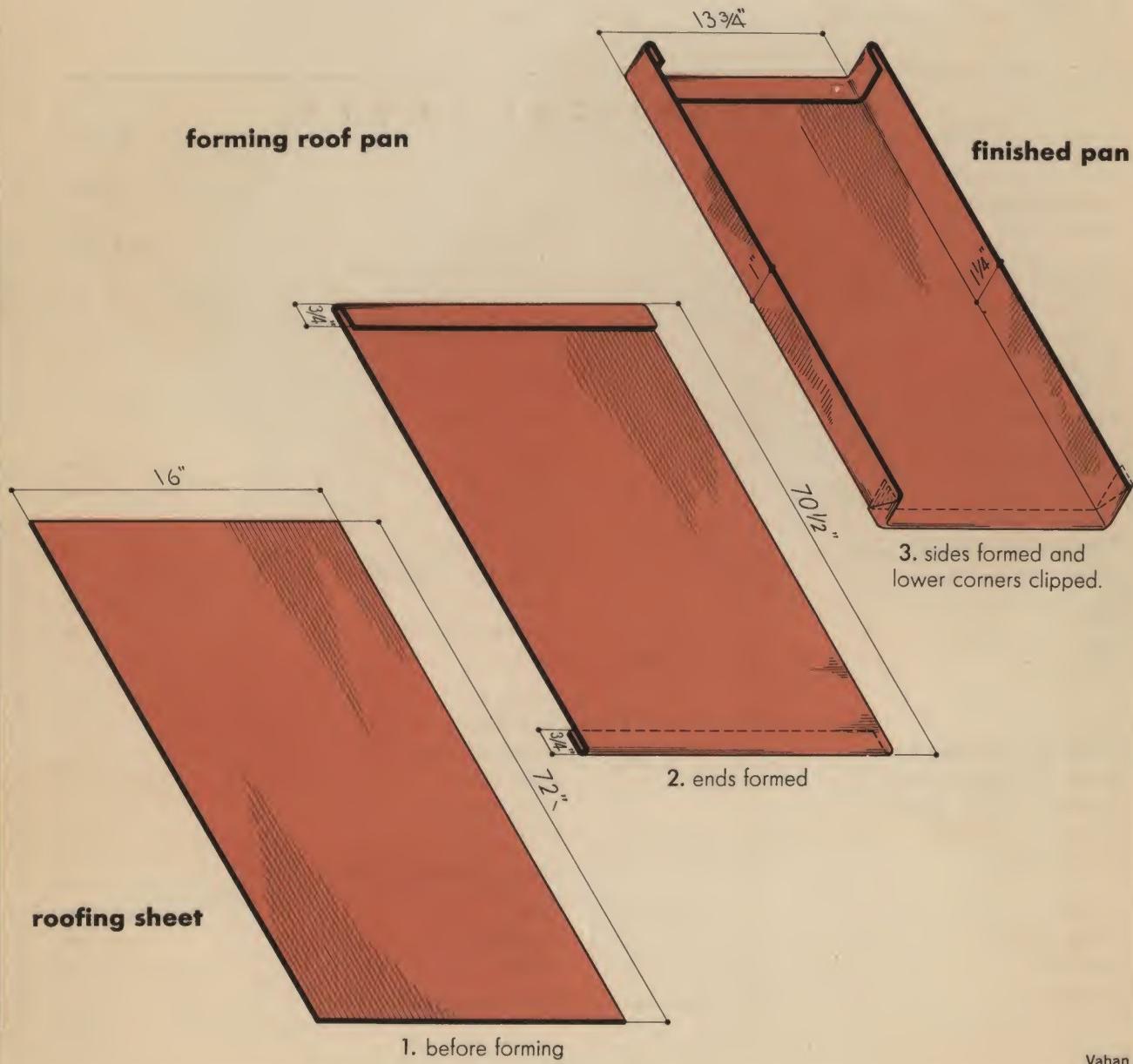
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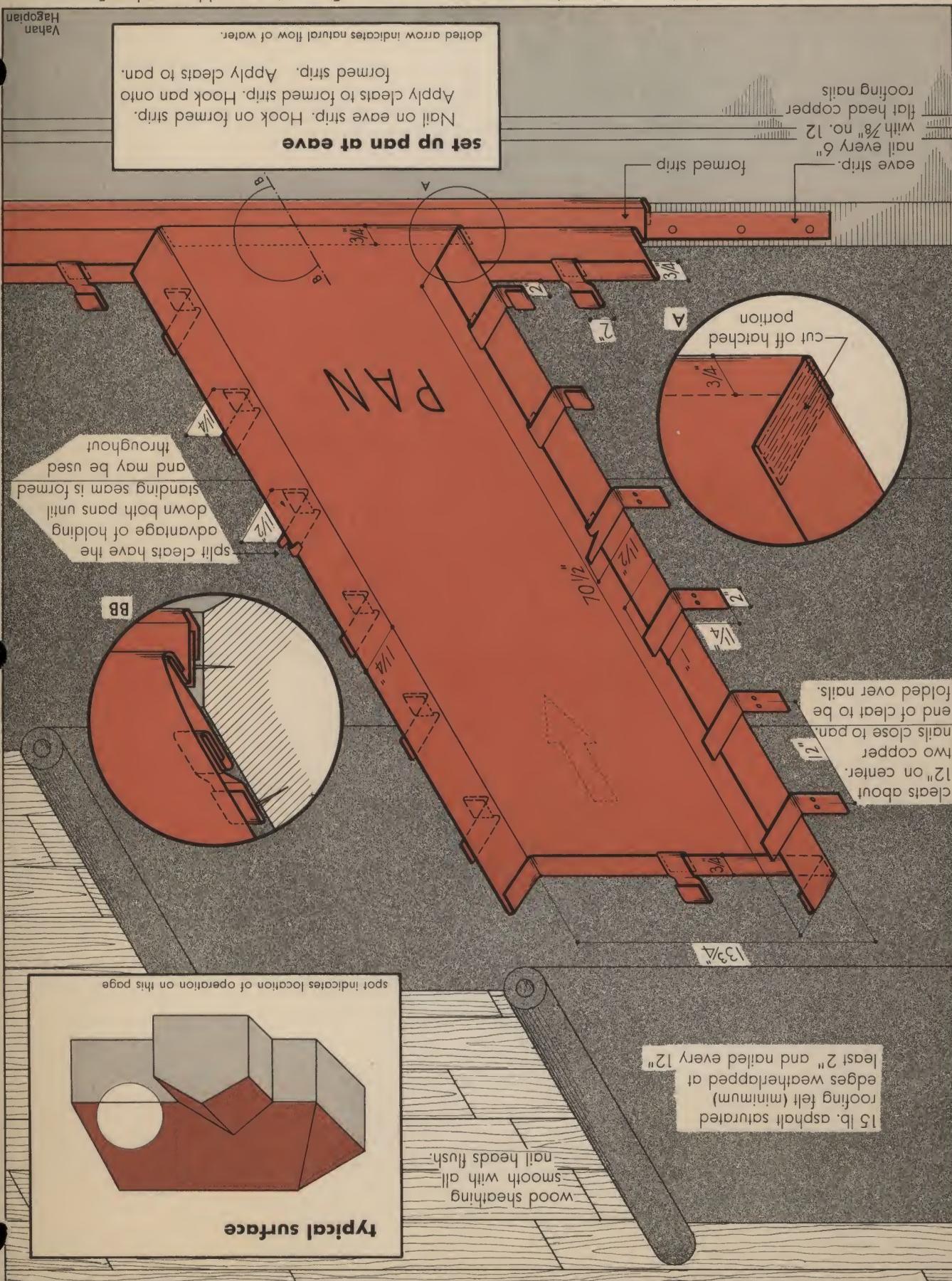
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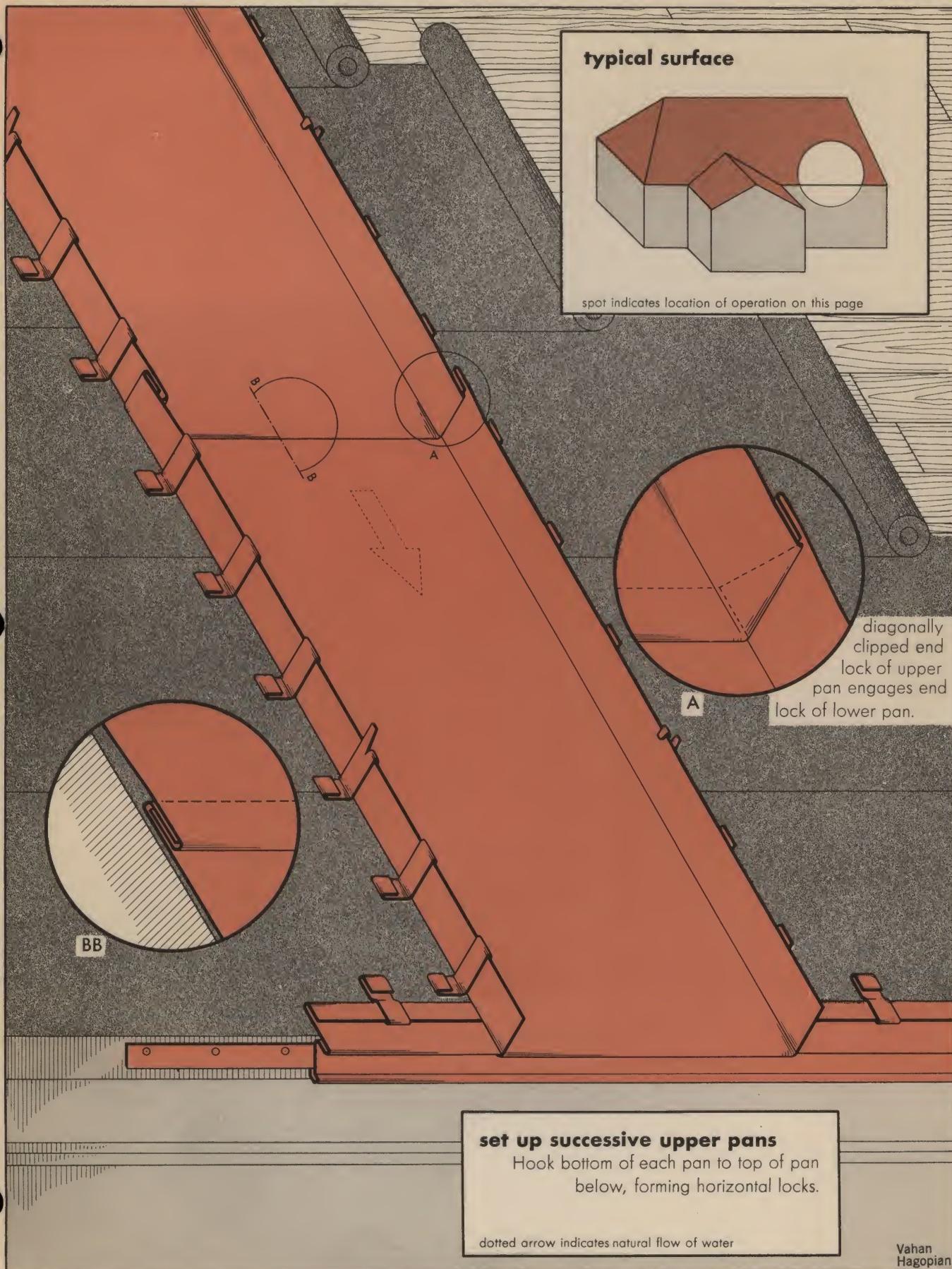
# Successive Steps in Laying Economy Copper Roofing by the Pan Method

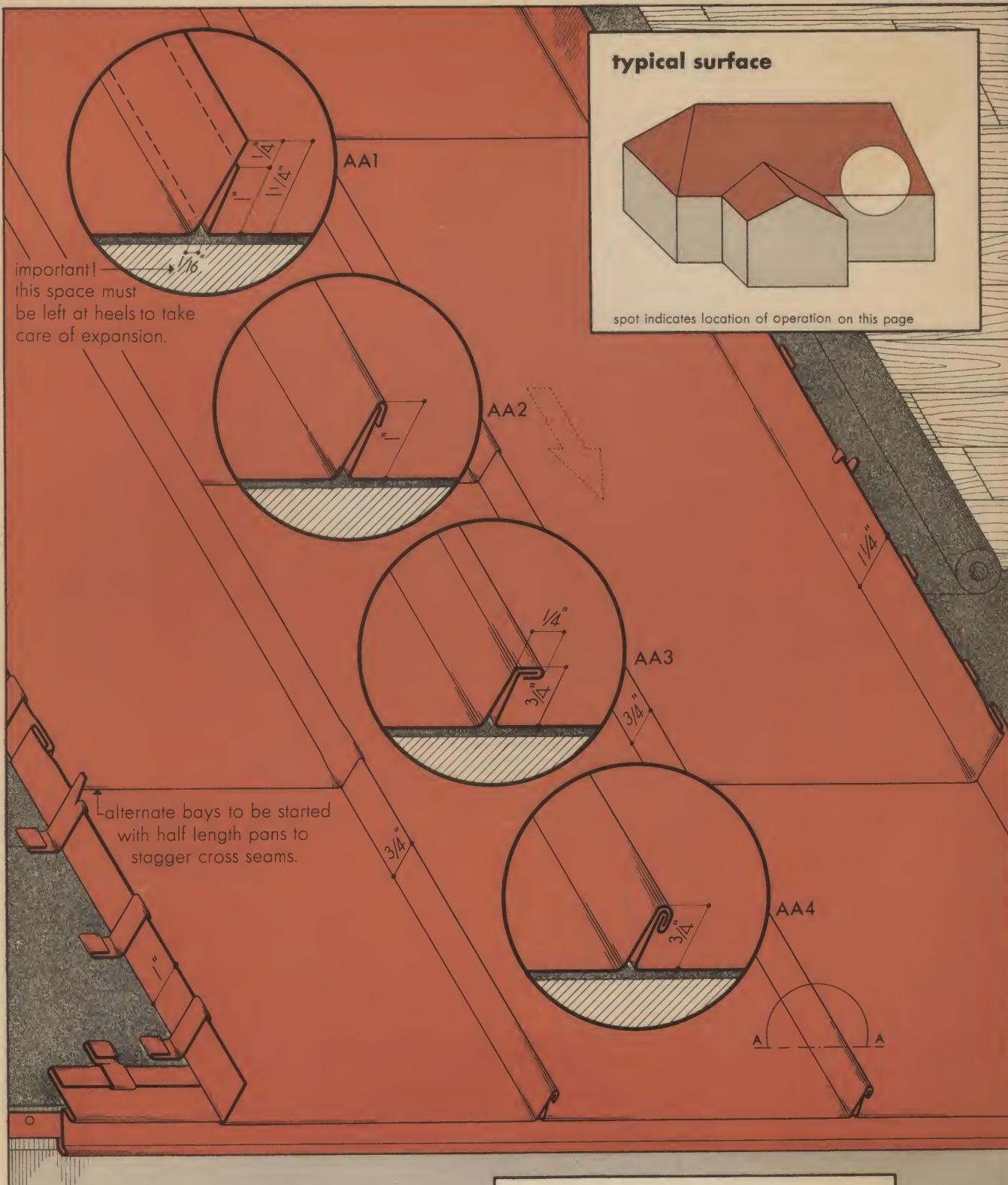
ROLL METHOD IS ILLUSTRATED STARTING AT PLATE 56



The above method is suggested when it is desired to start at any given point. For starting at gable see Plate 5.



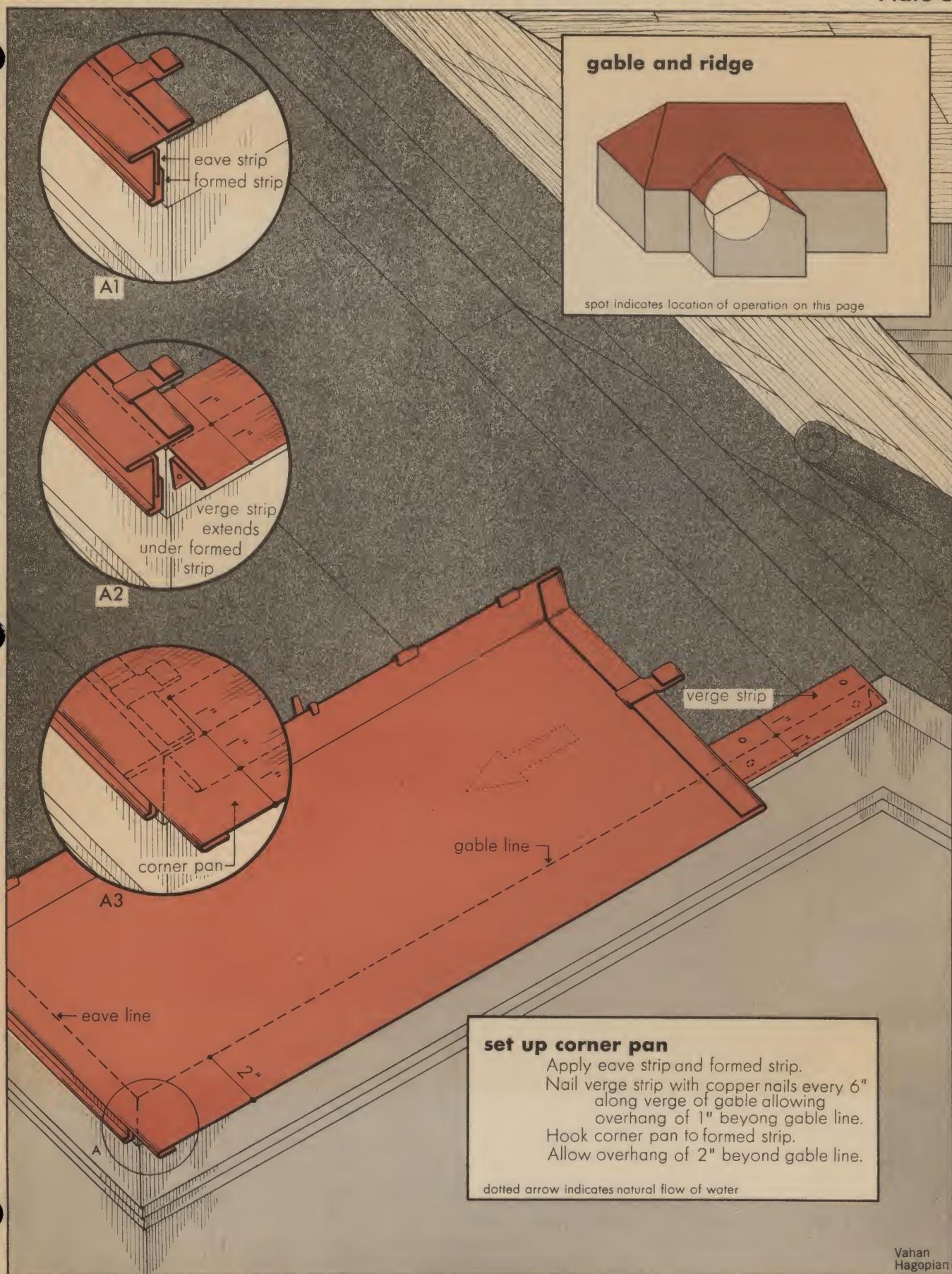


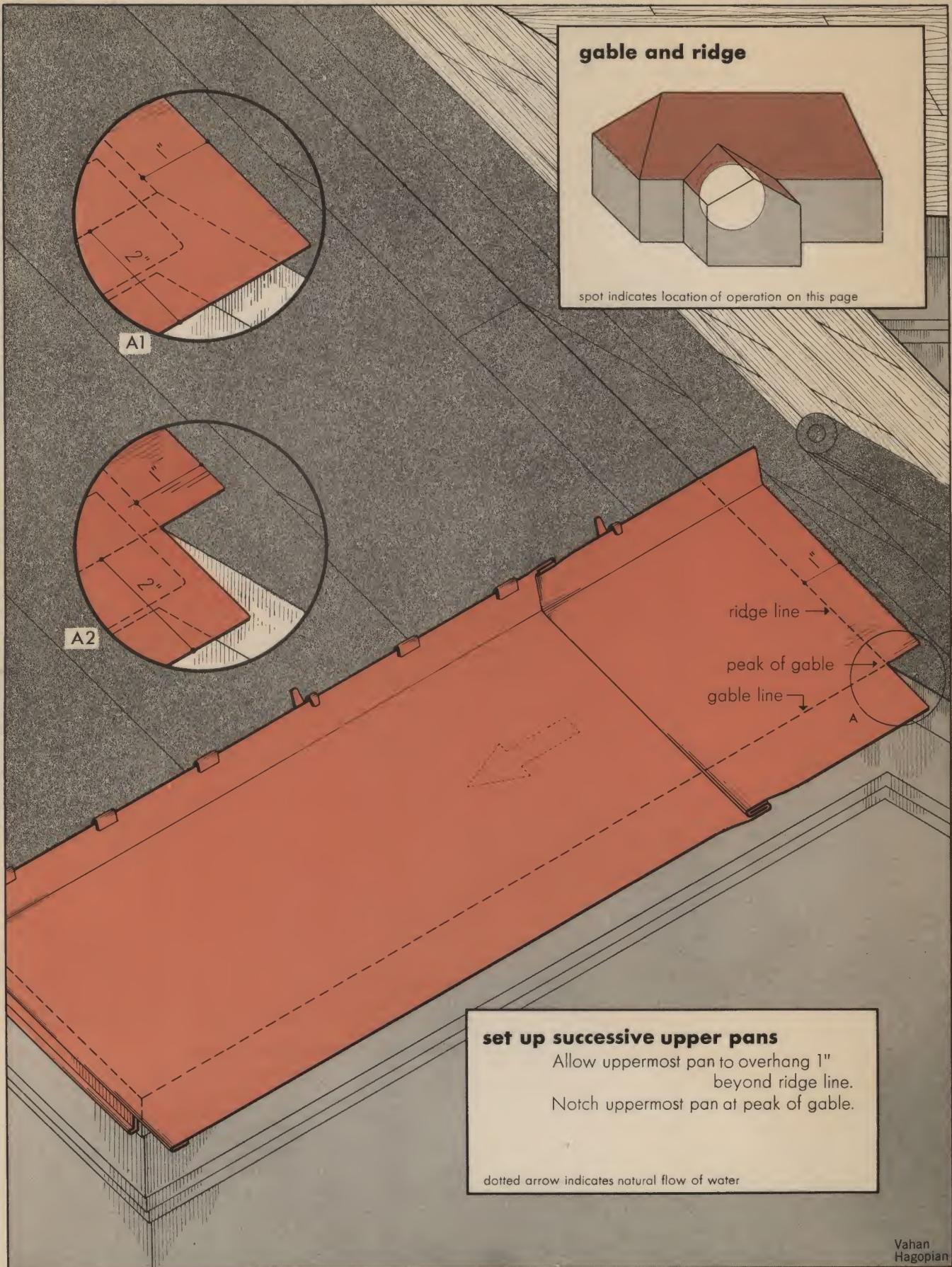
**set up and assemble adjacent pans**

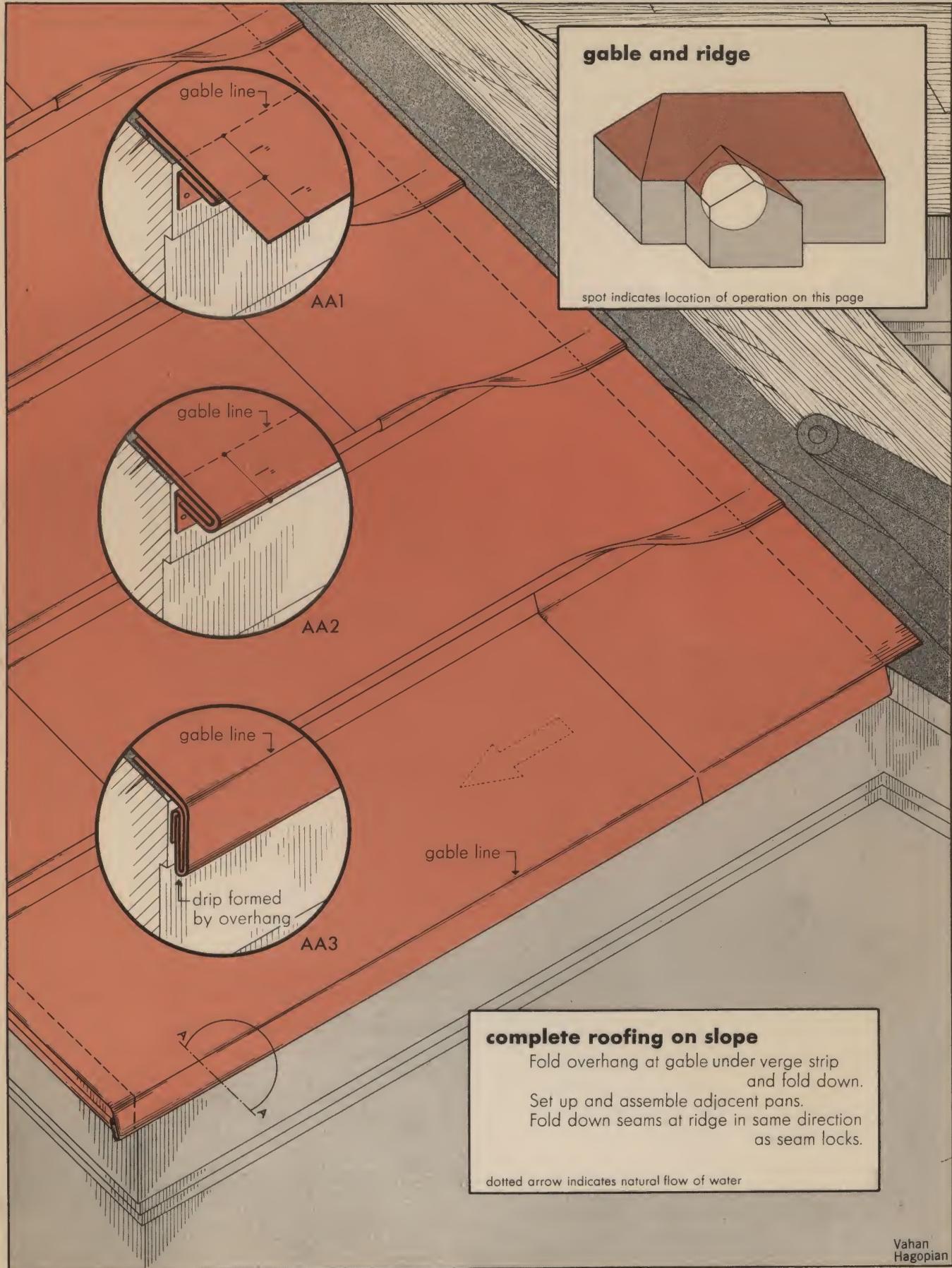
Leave  $\frac{1}{16}$ " play between adjacent pans.  
Form double lock standing seams.

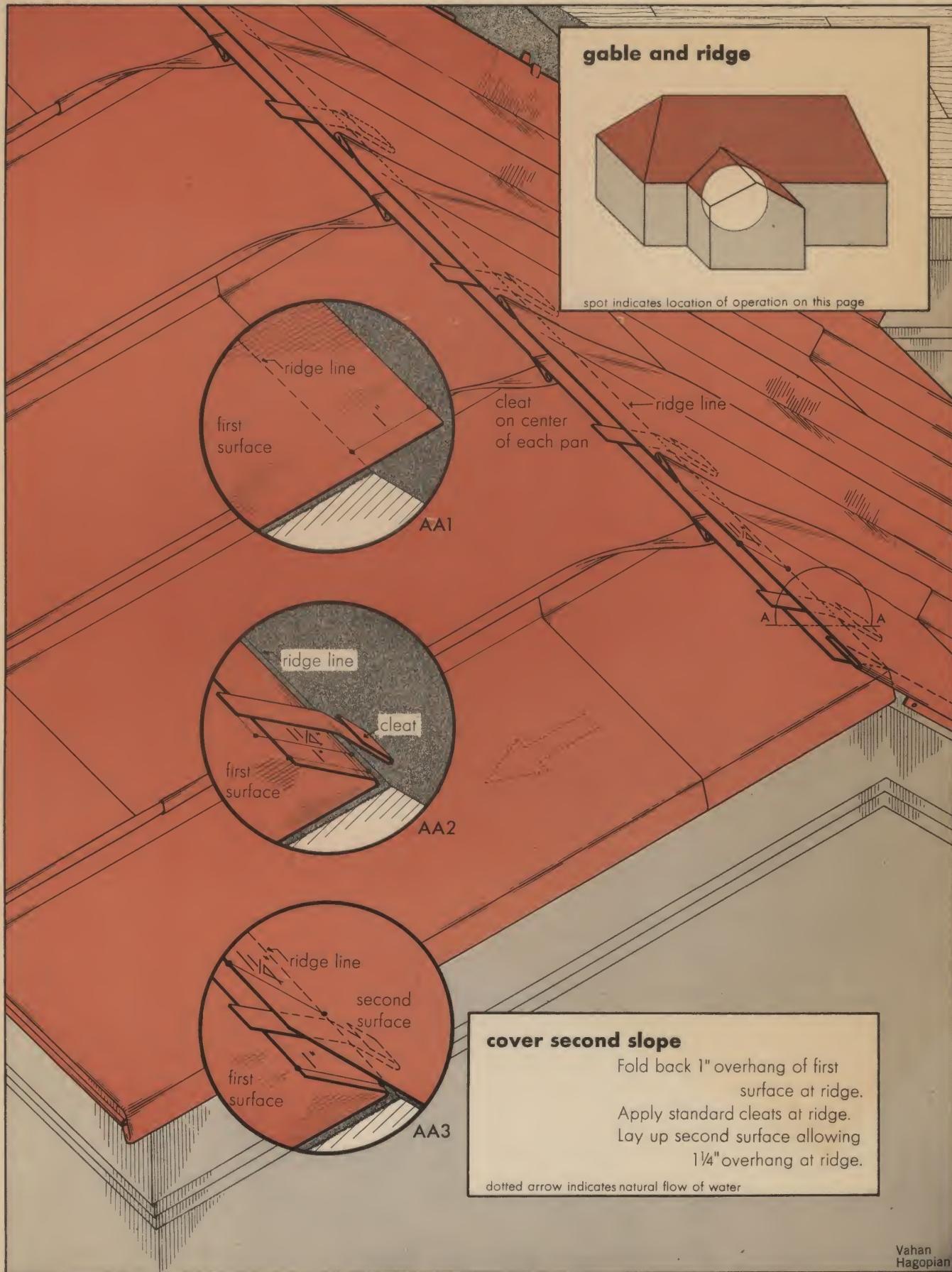
dotted arrow indicates natural flow of water

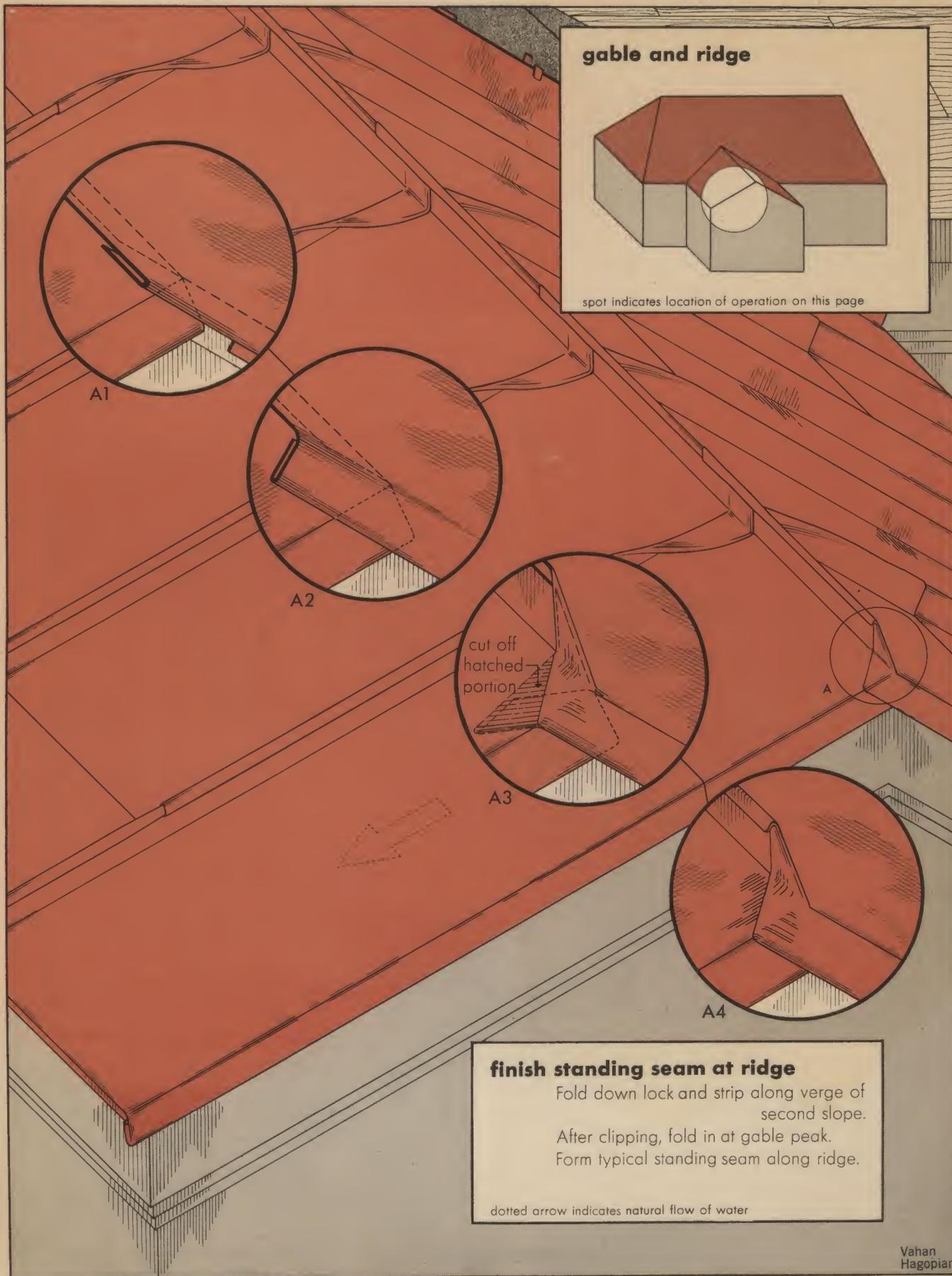
Vahan  
Hagopian

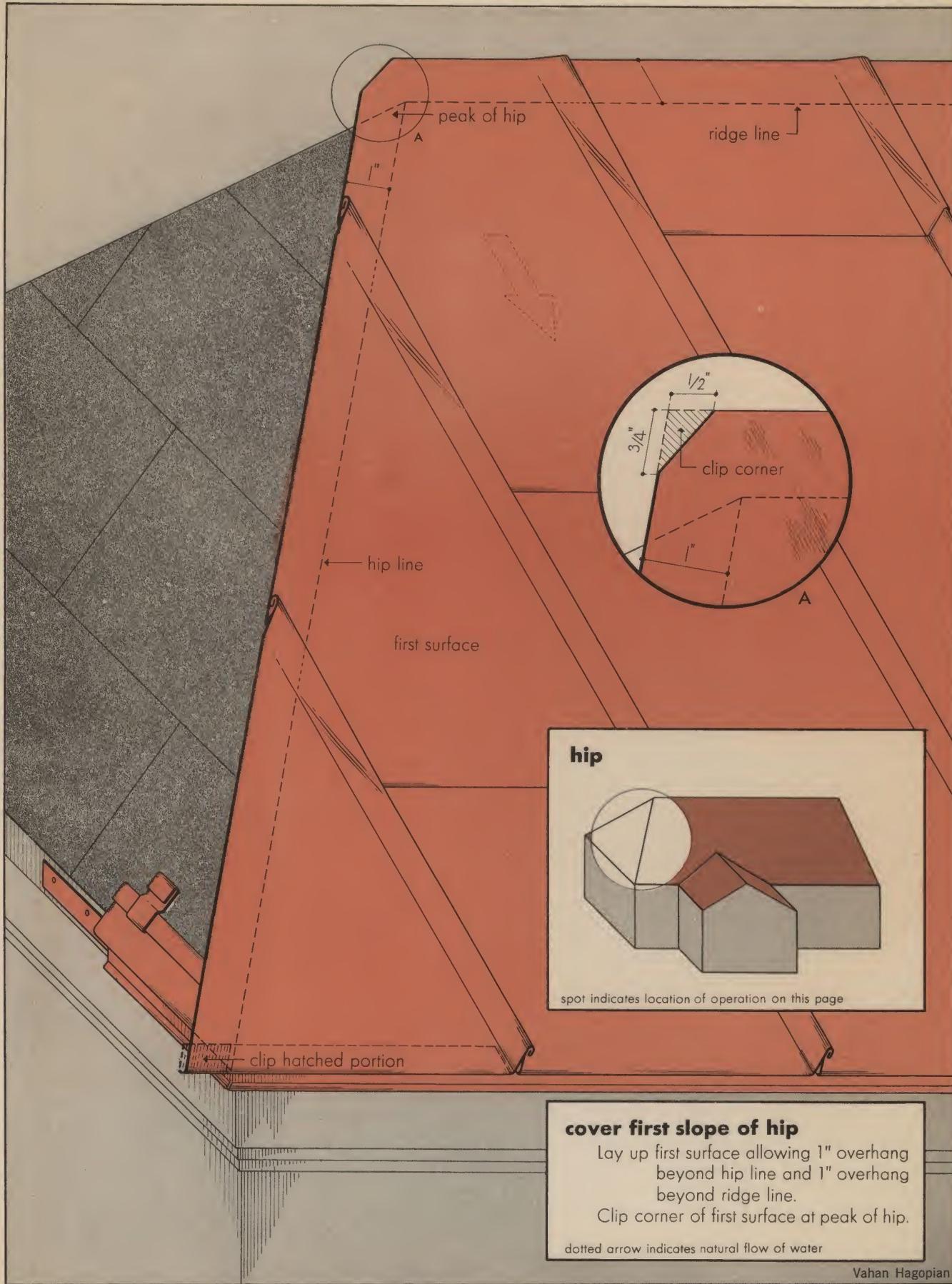


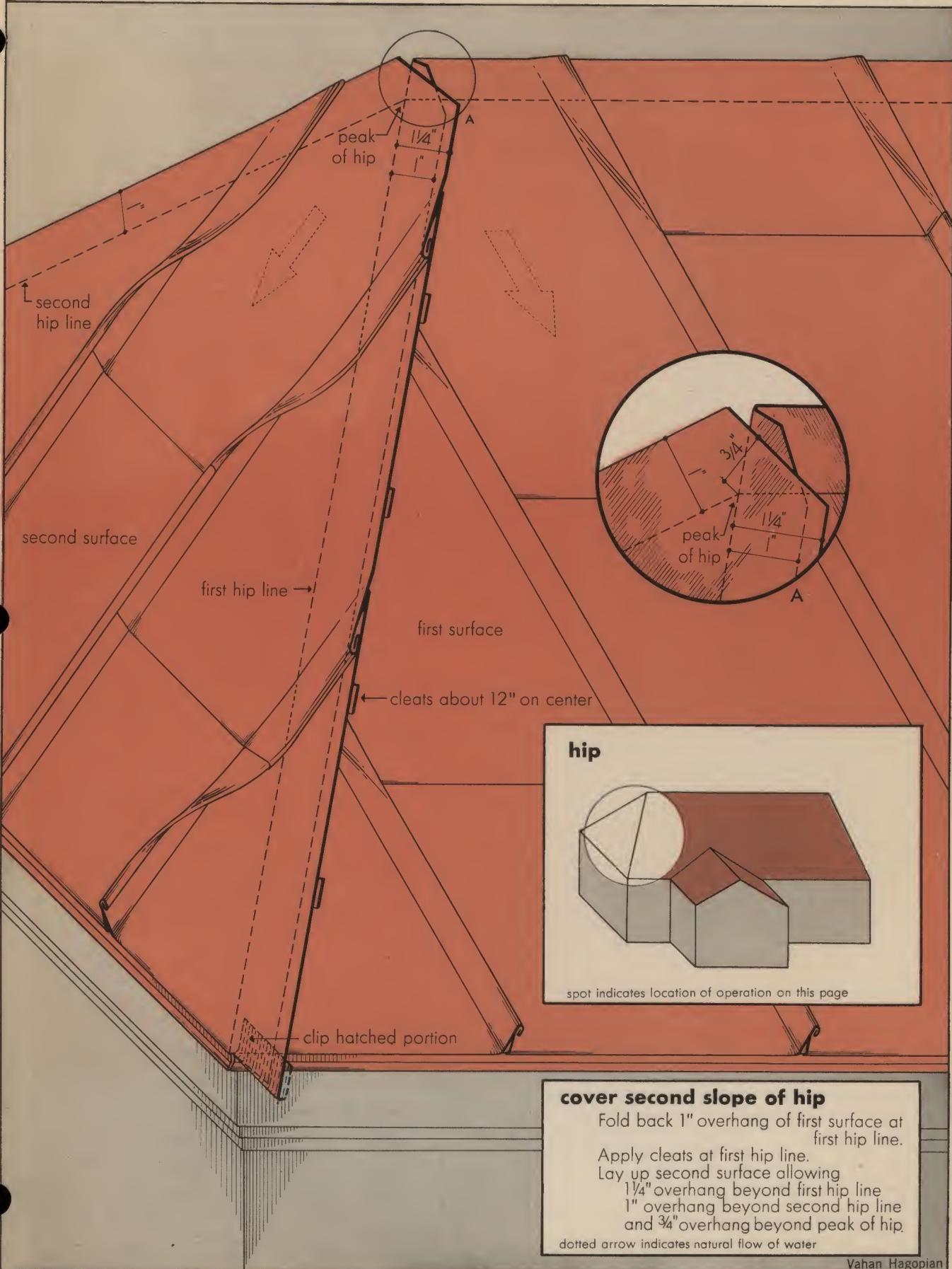


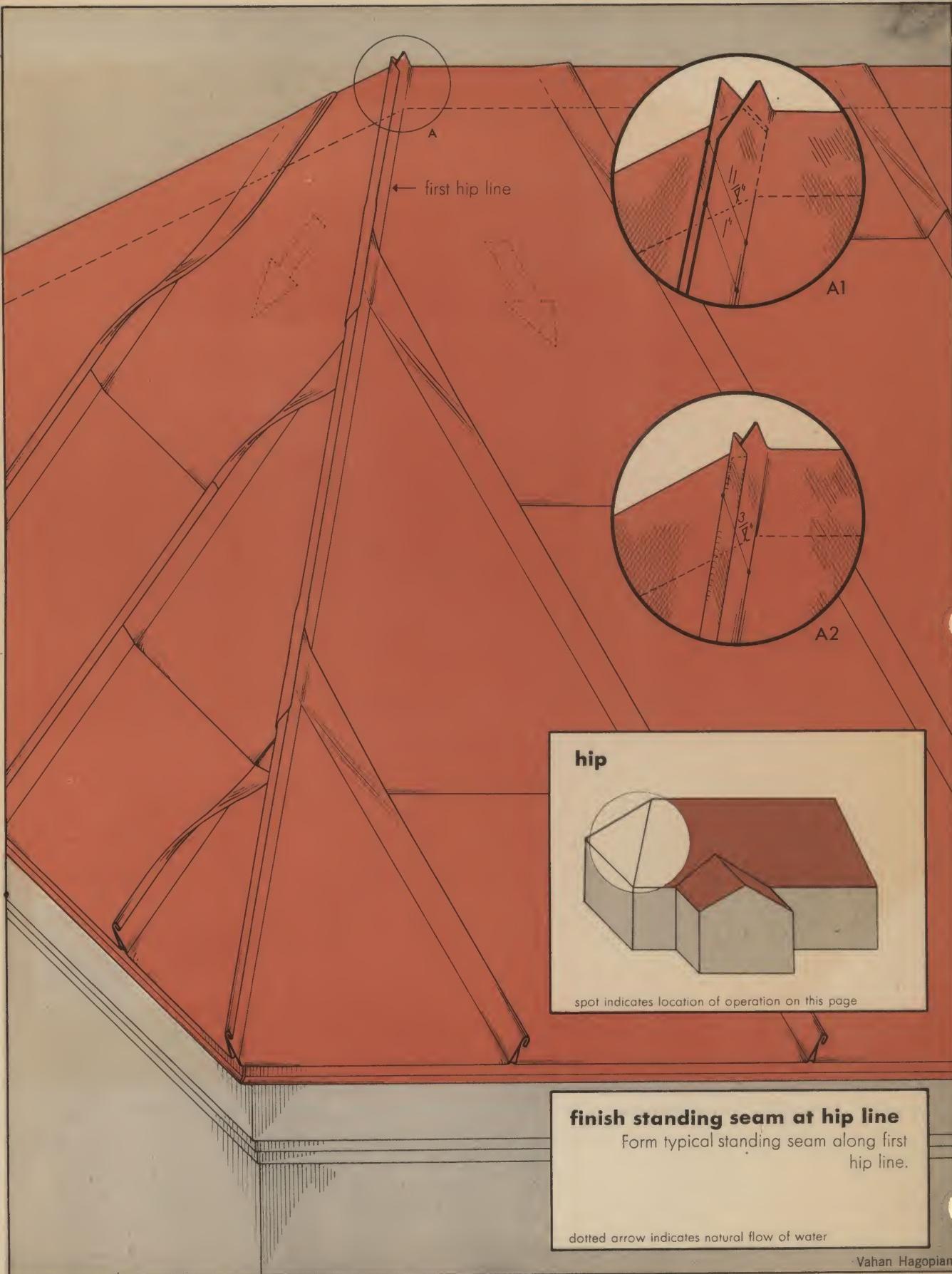


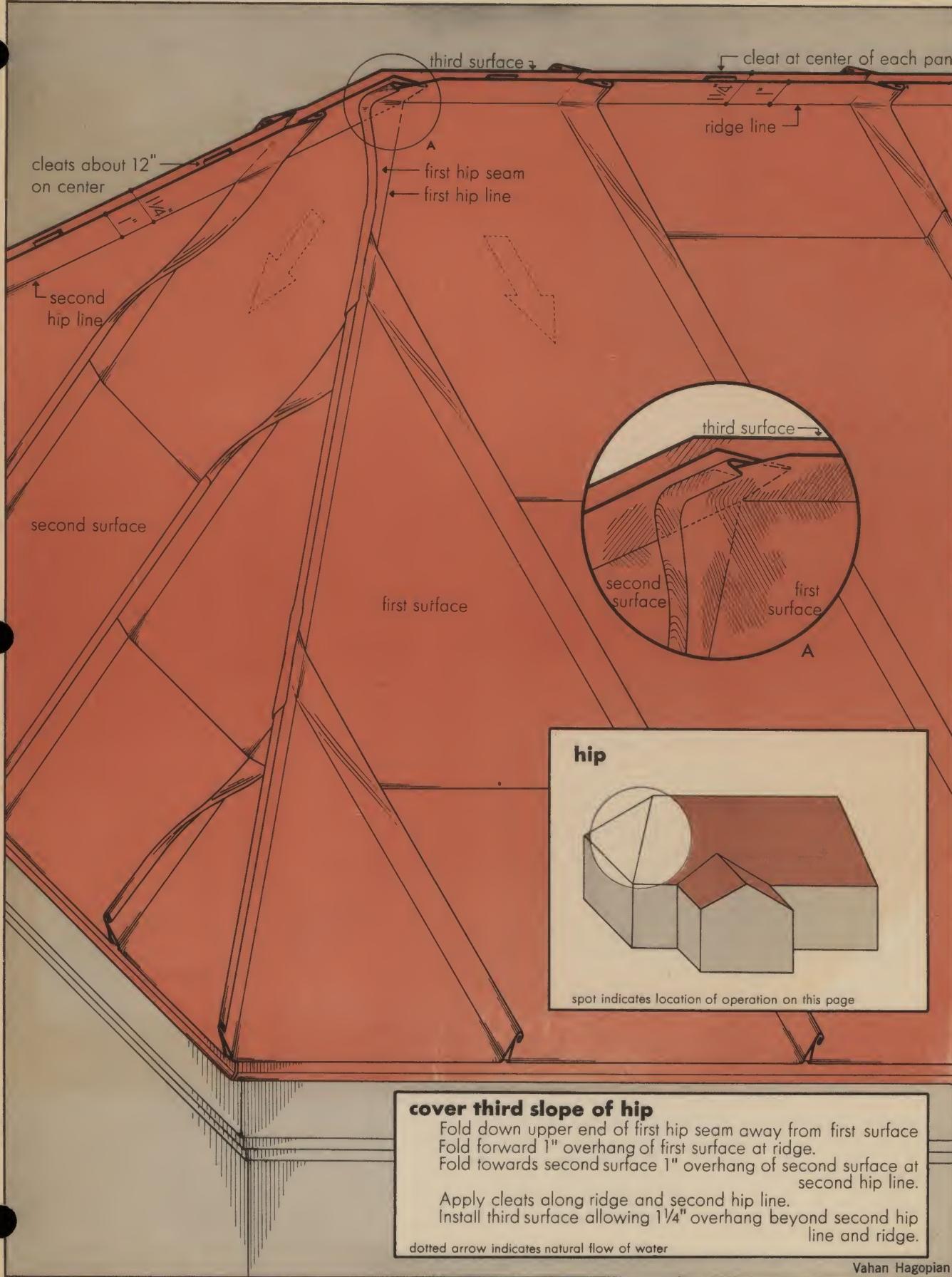


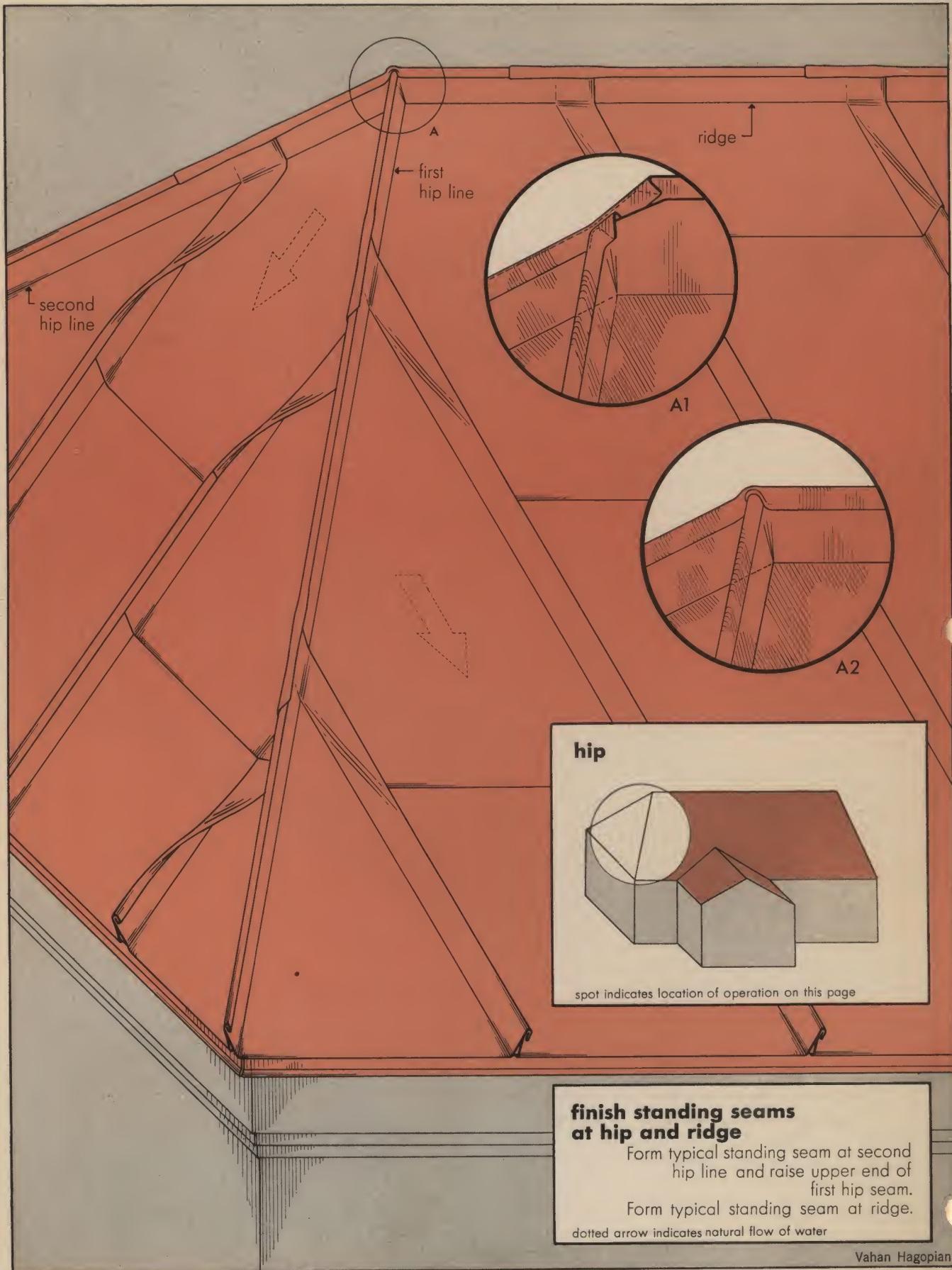


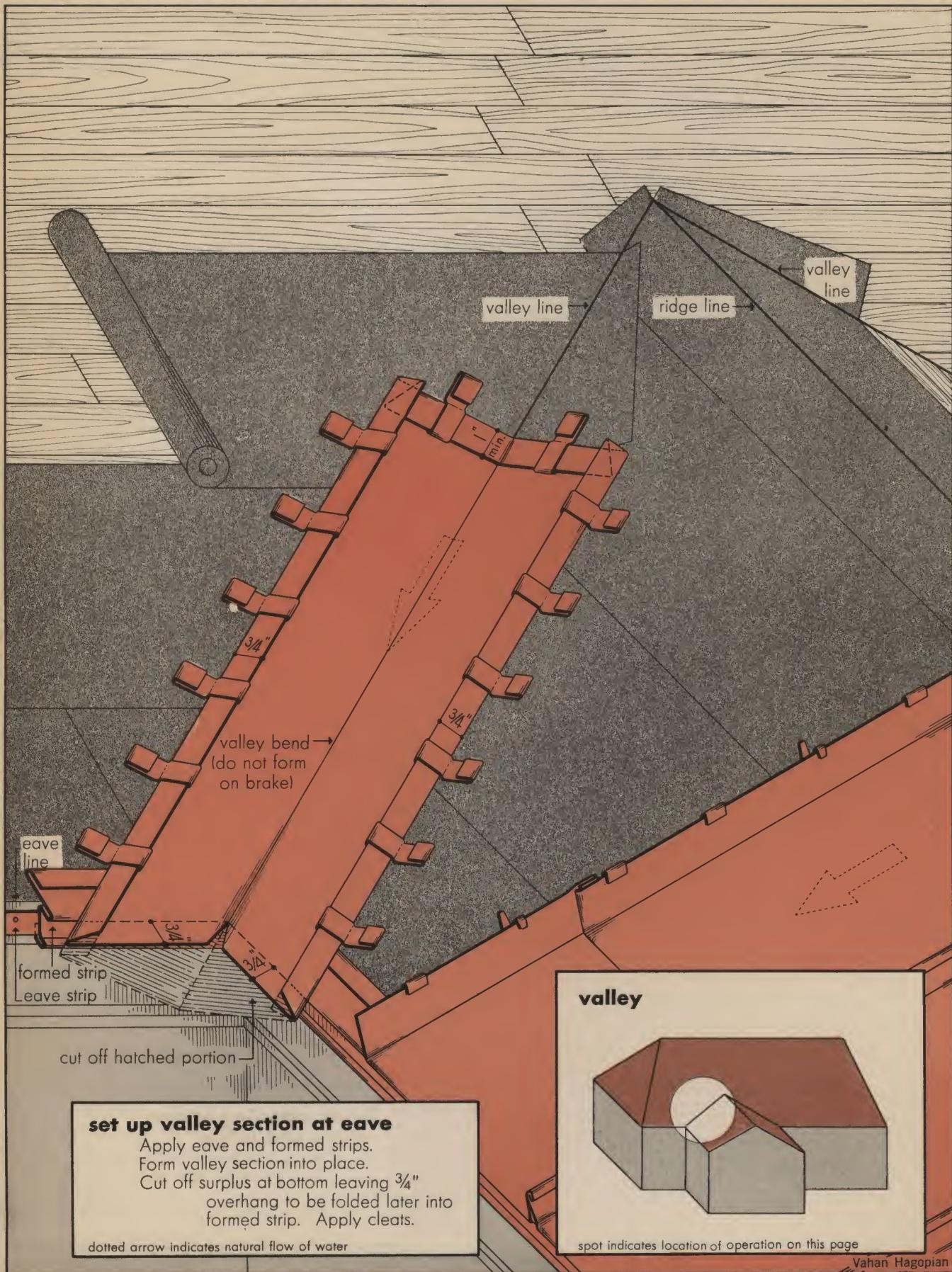


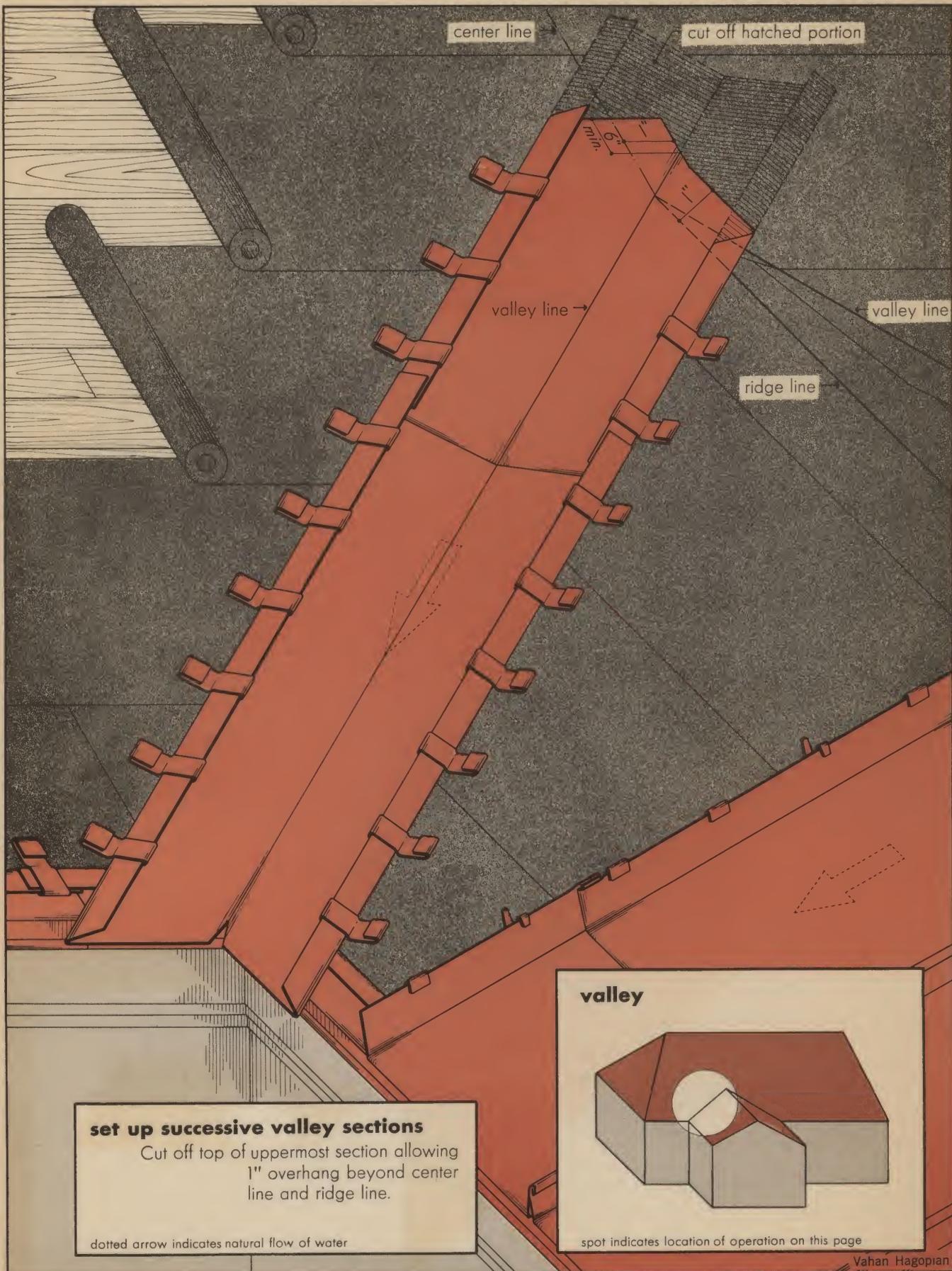


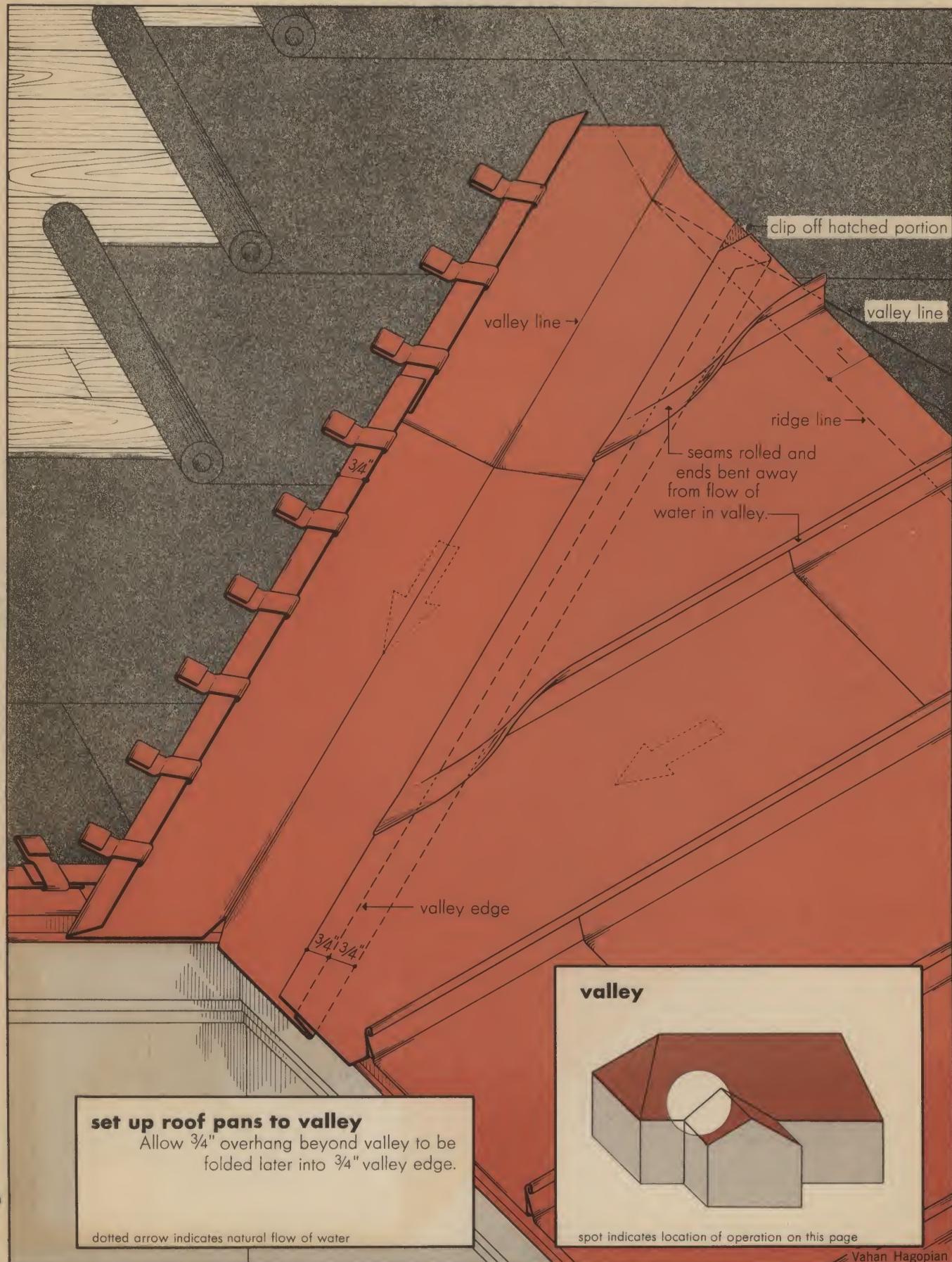


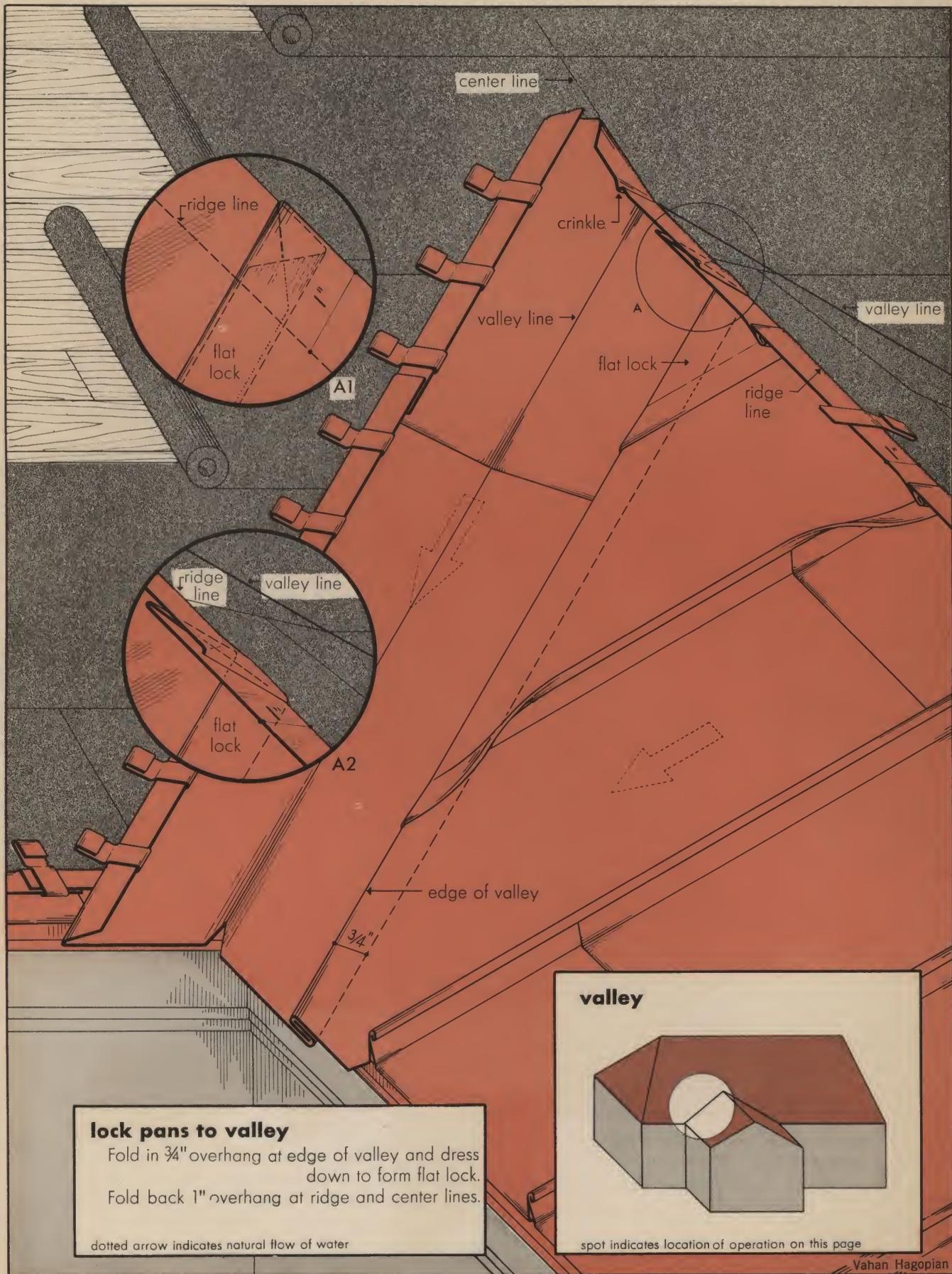


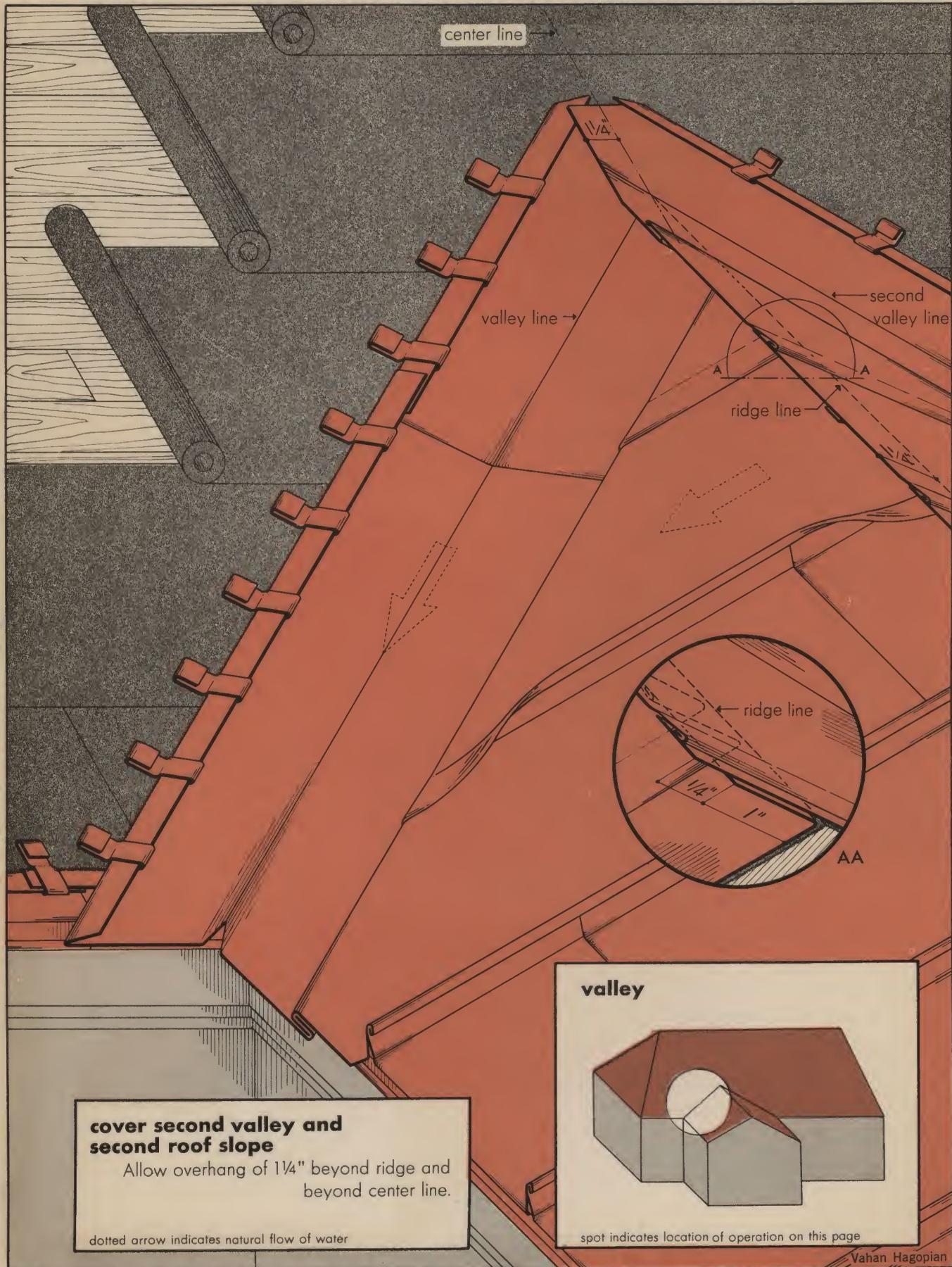


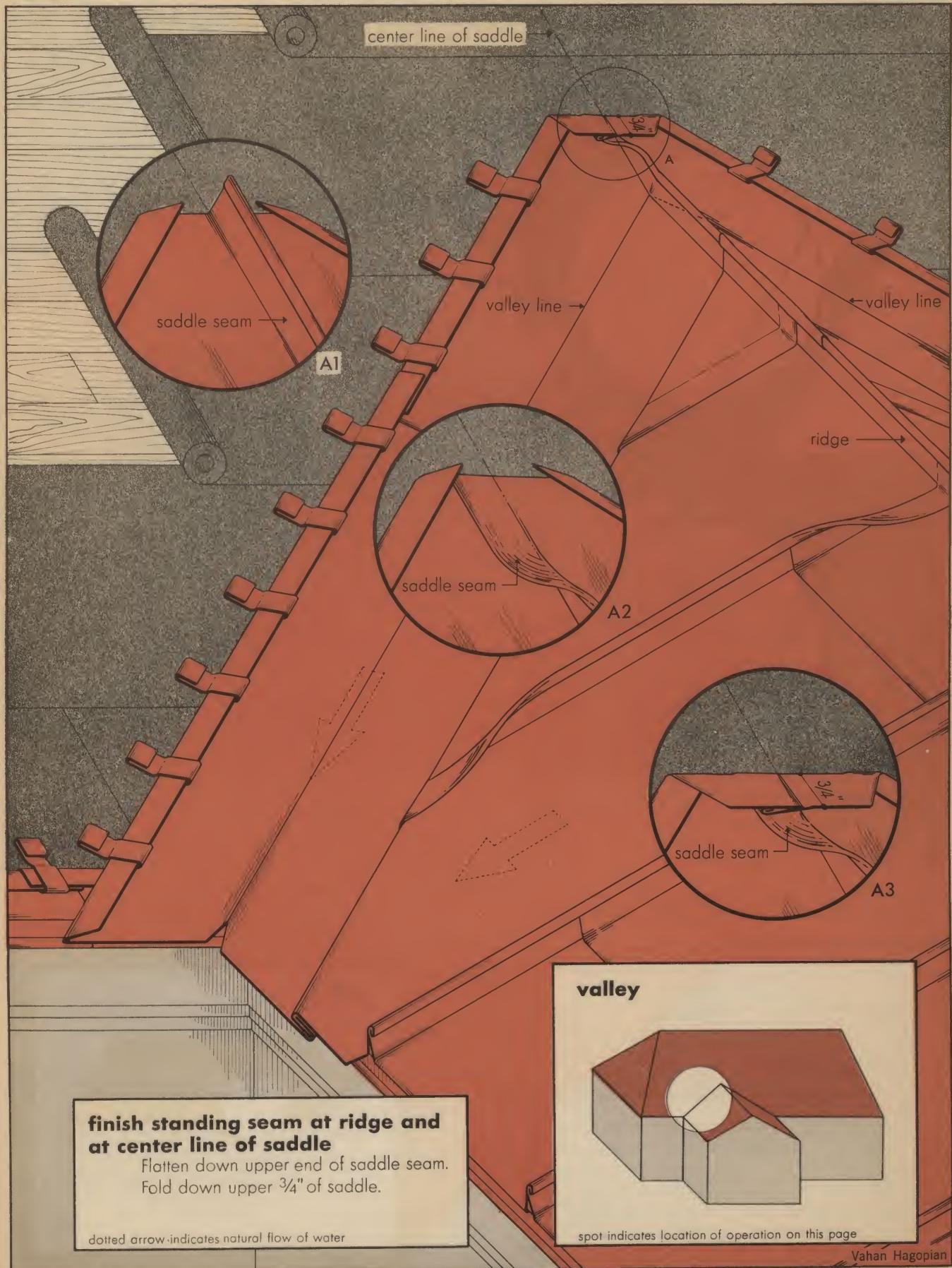


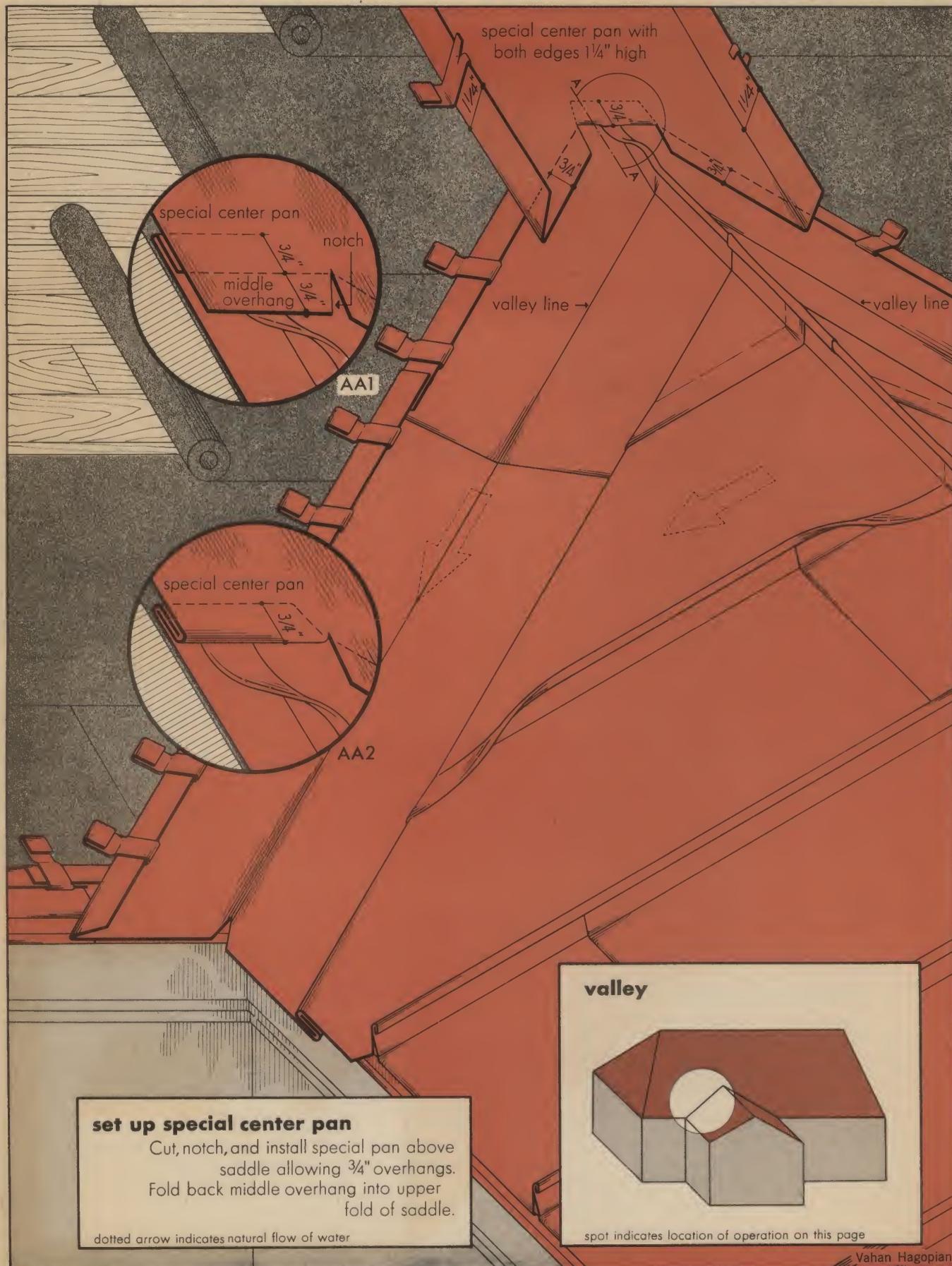




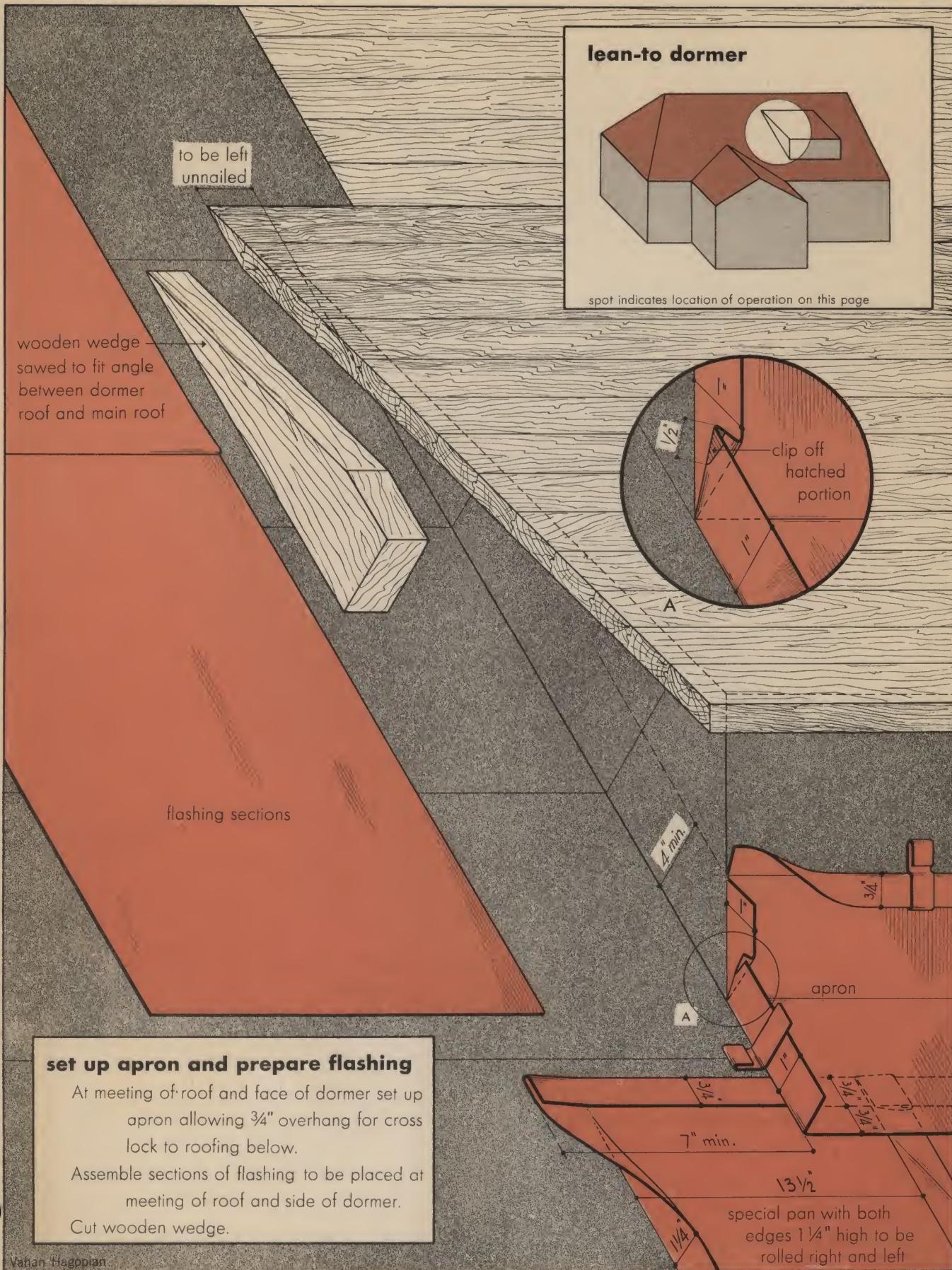


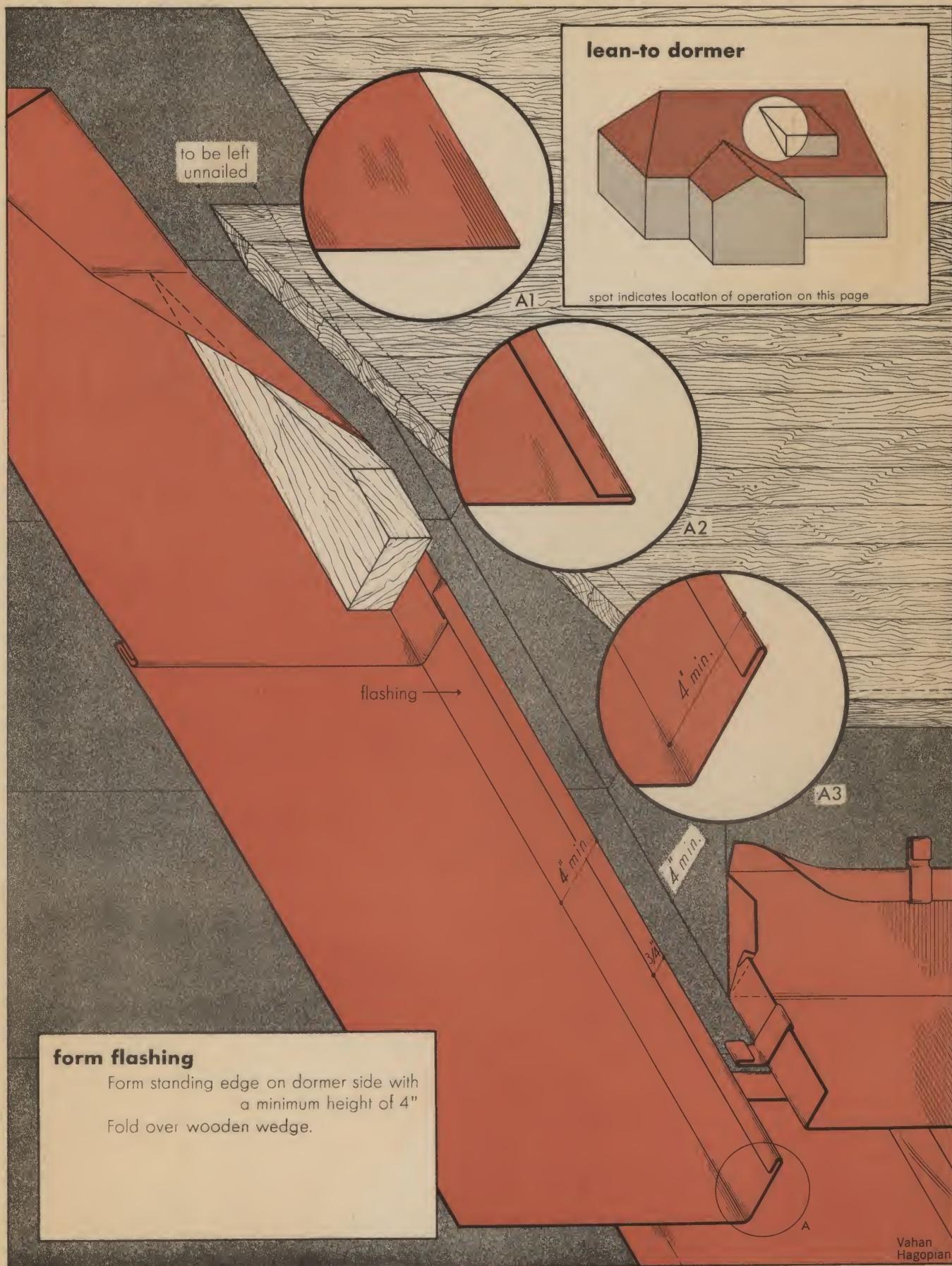


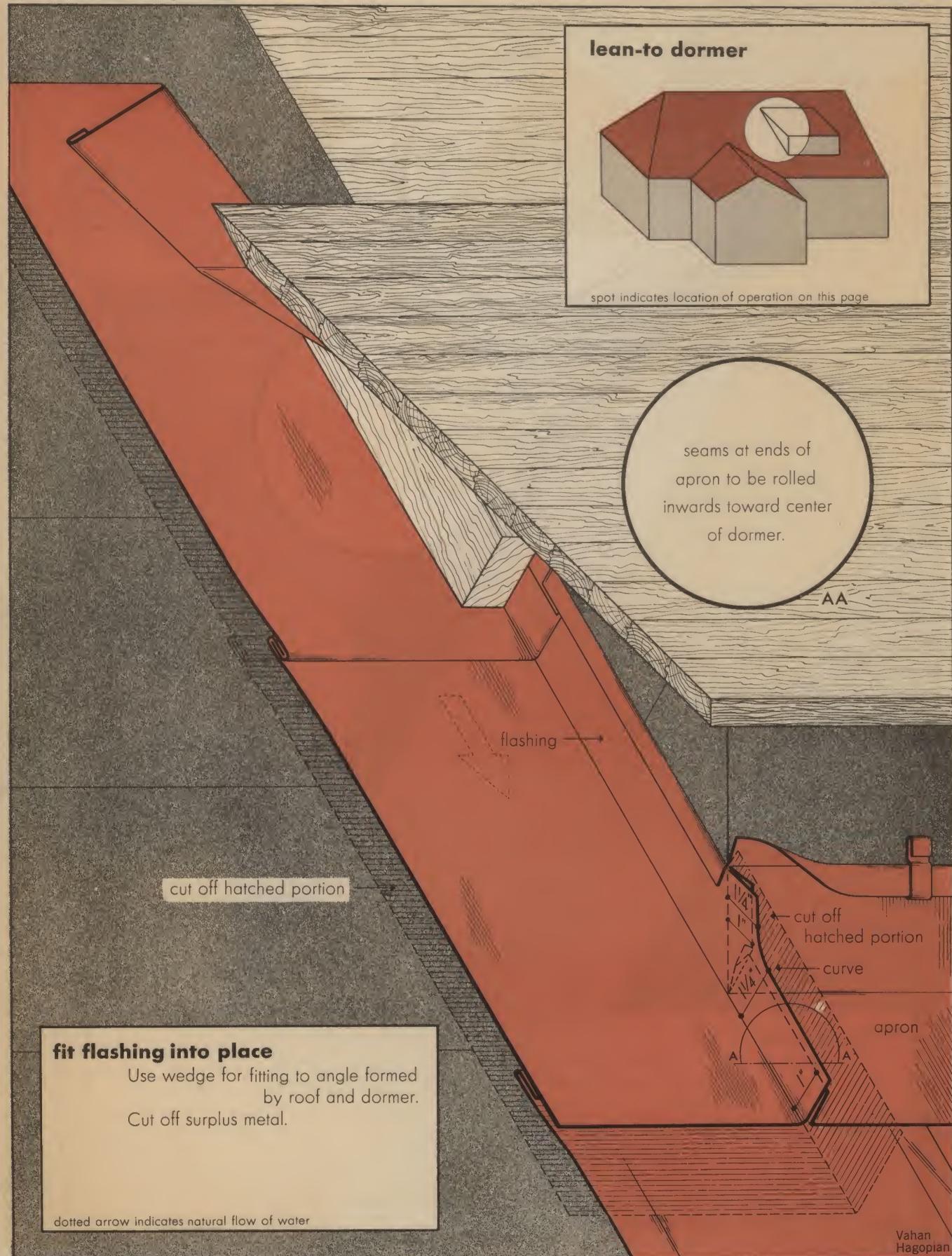


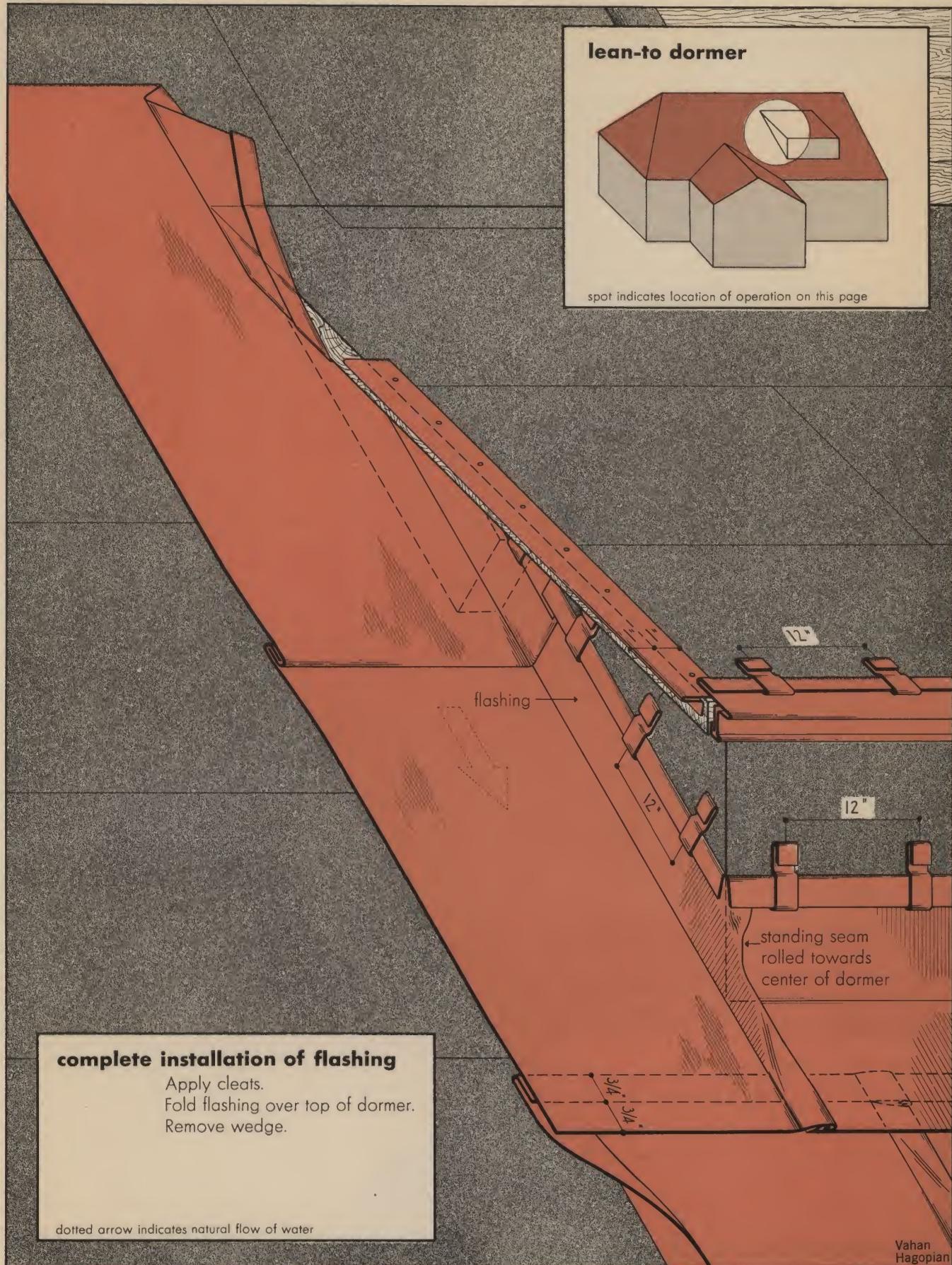


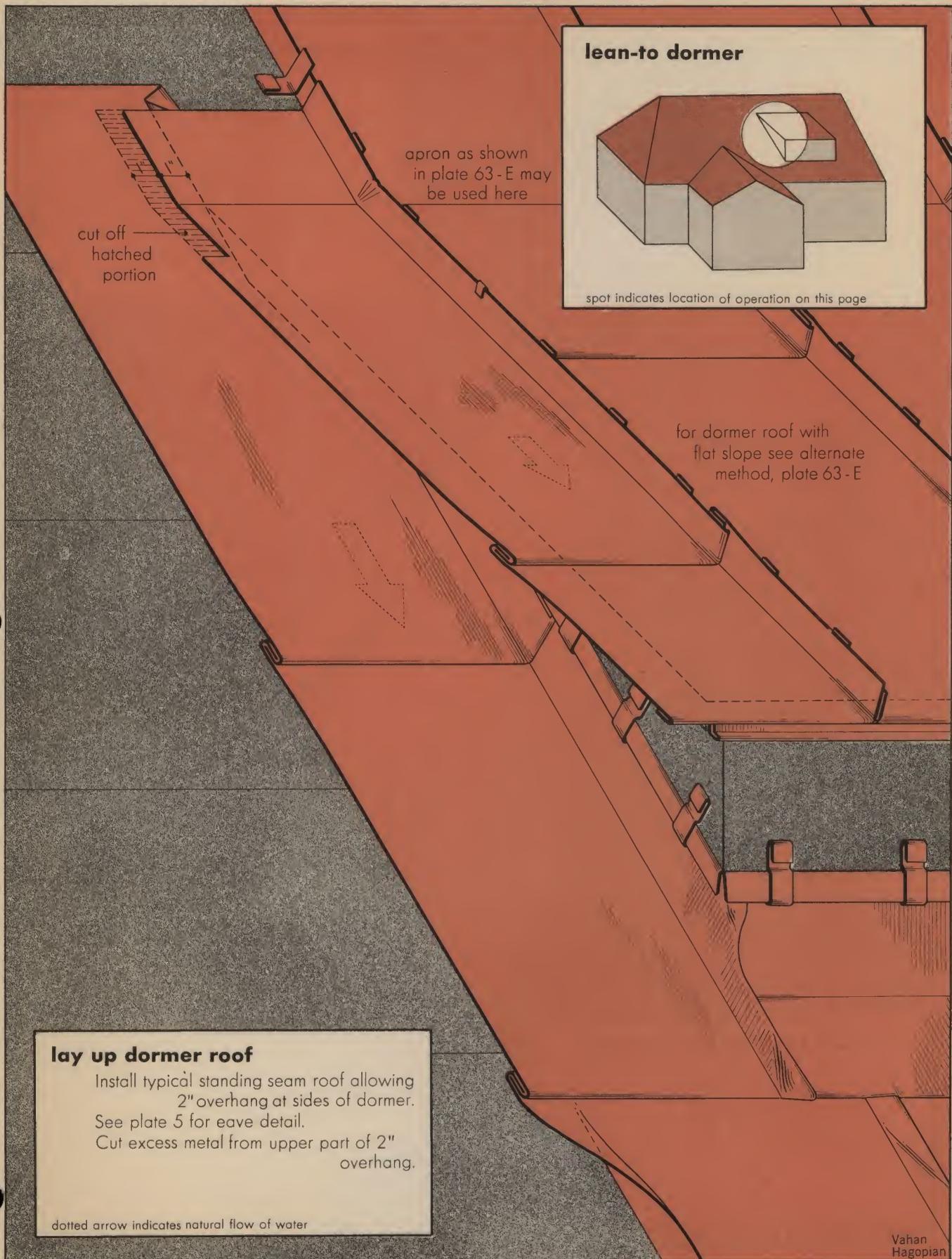


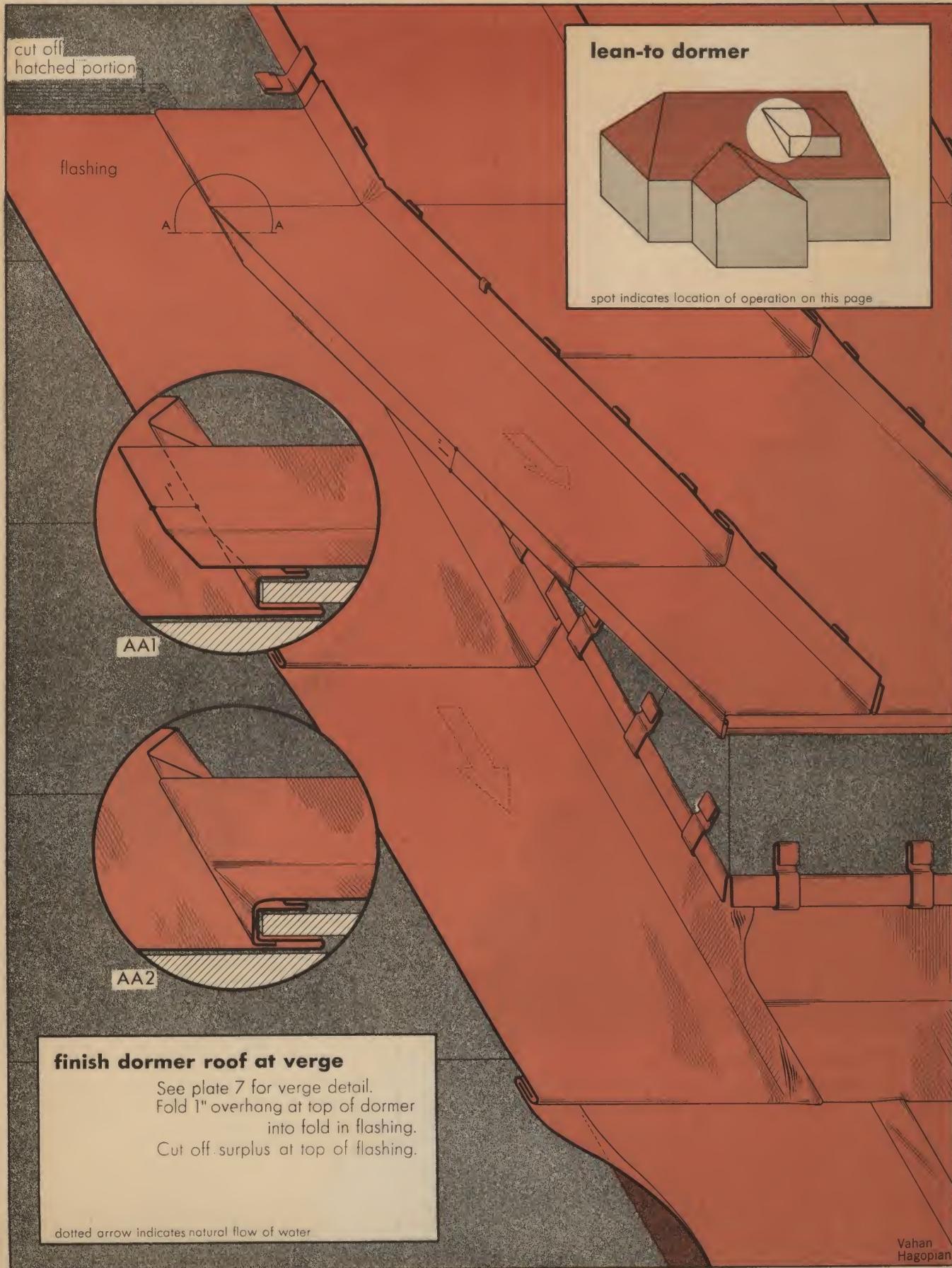


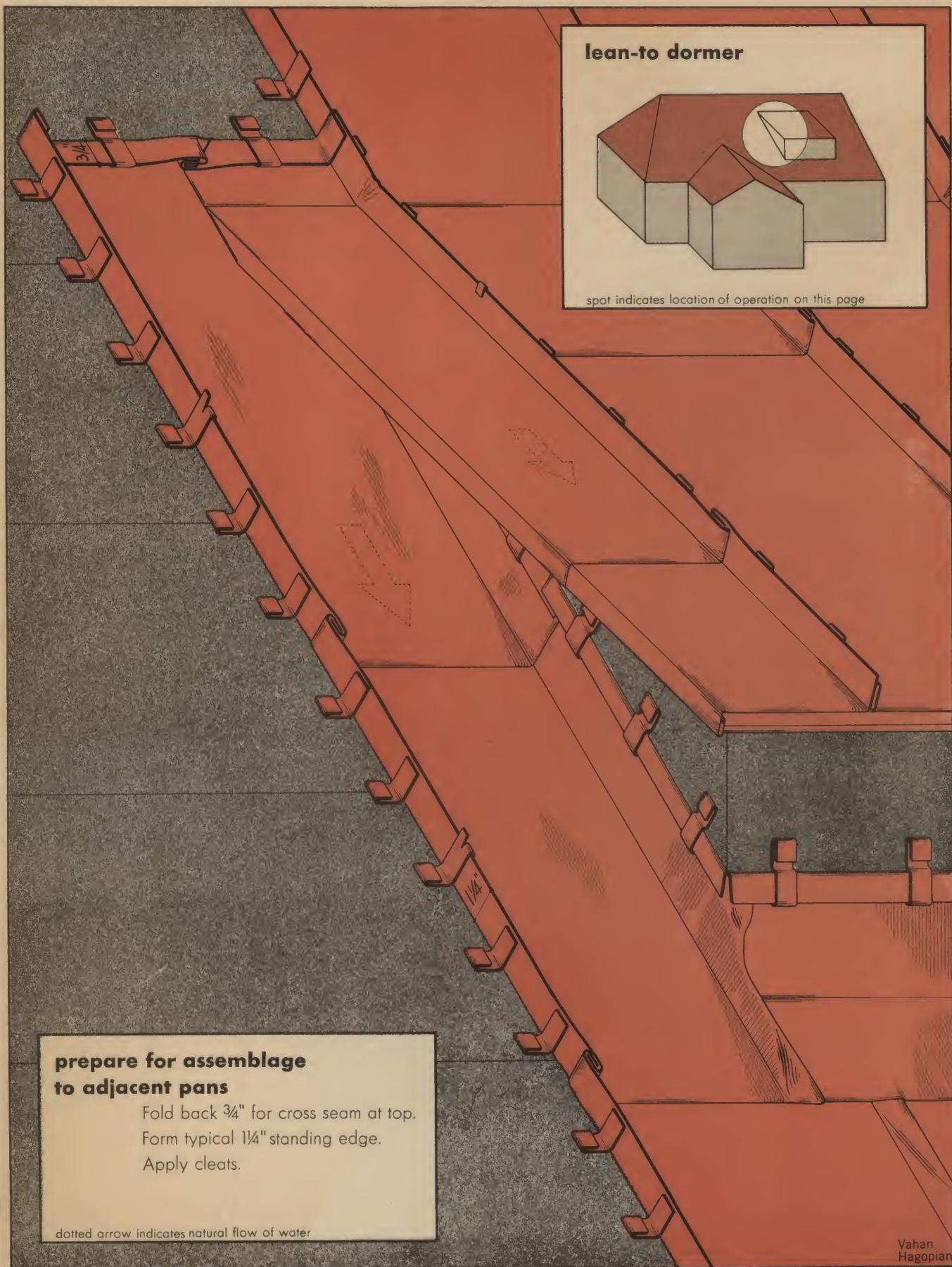


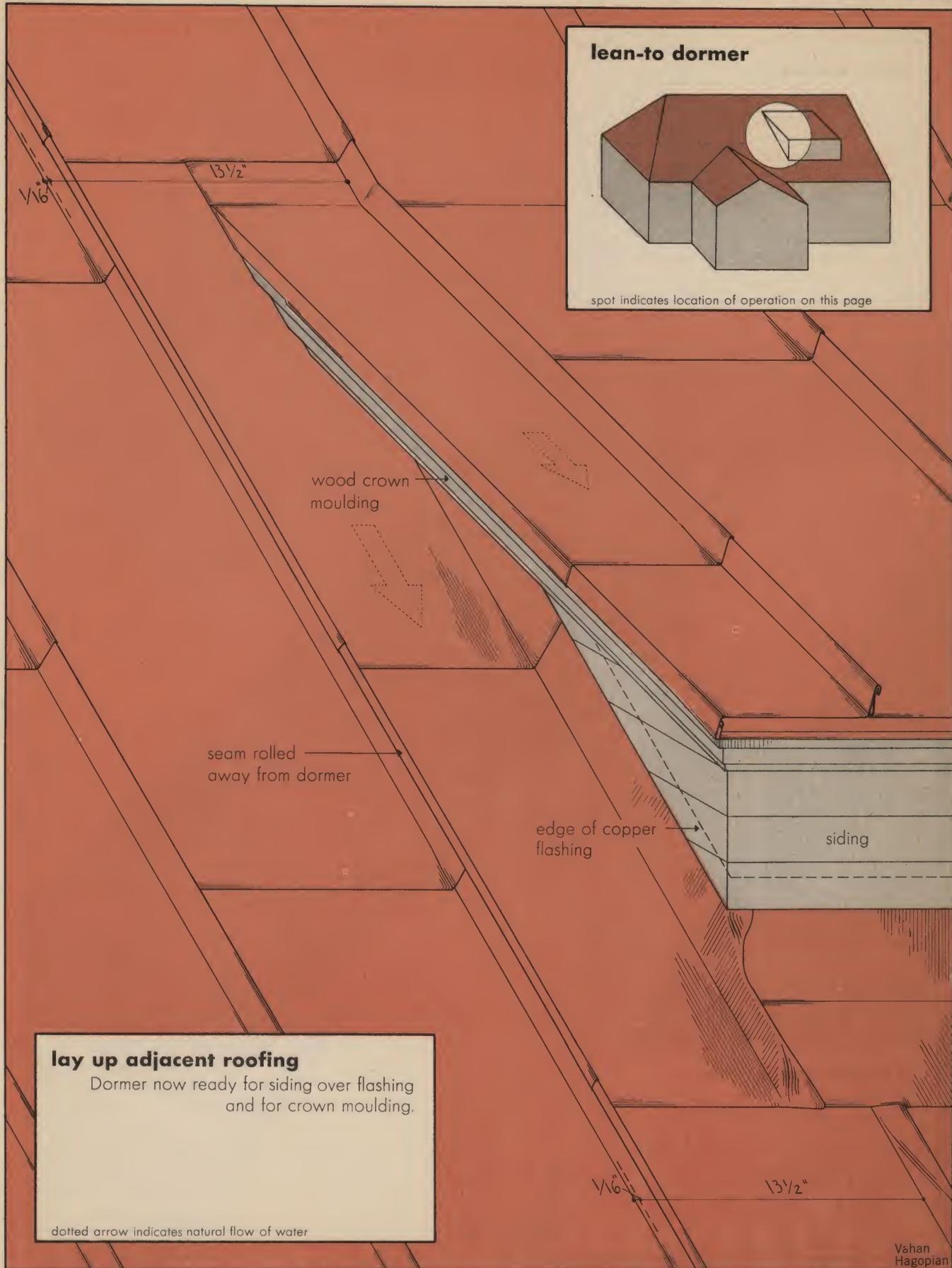


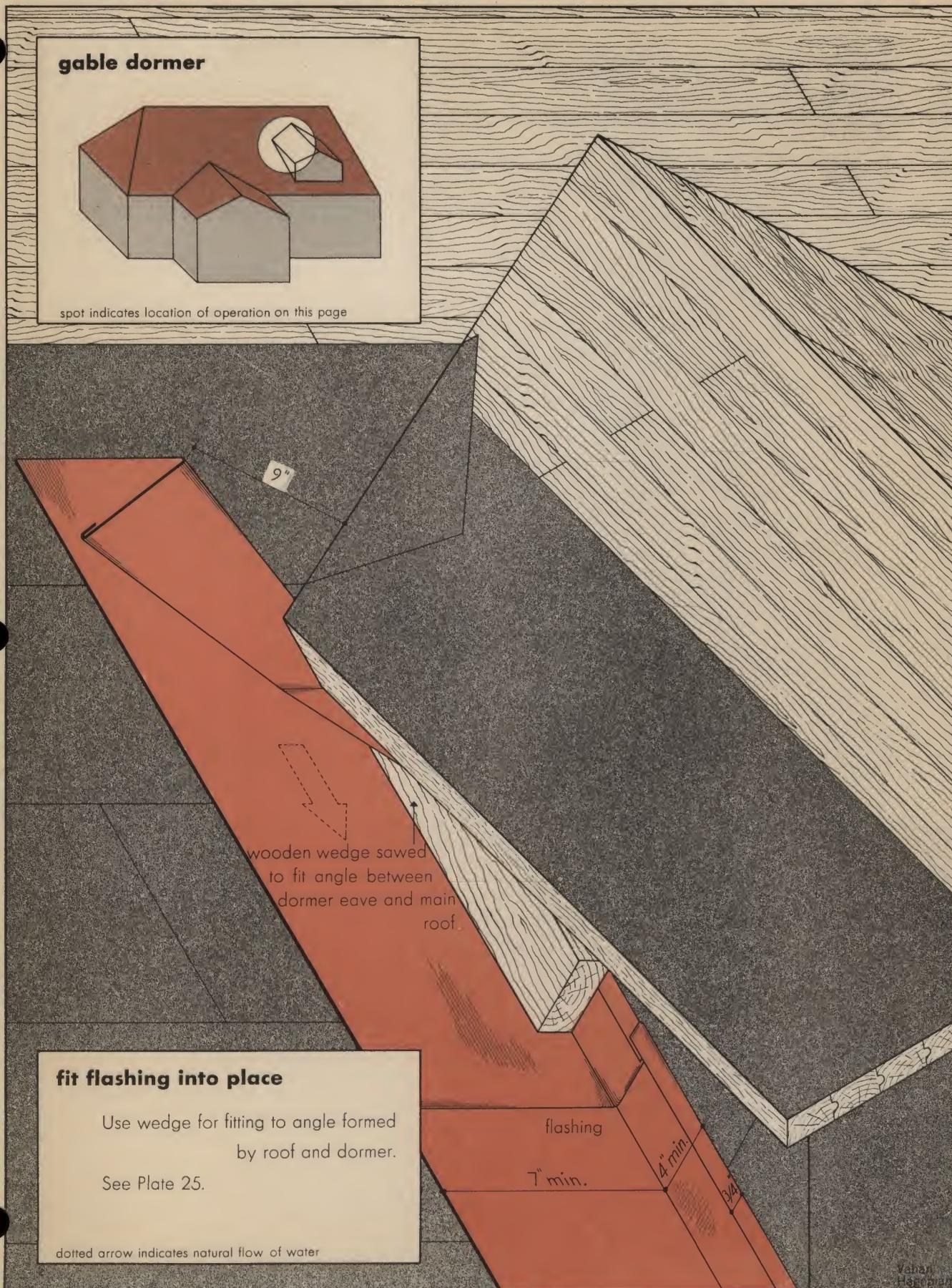


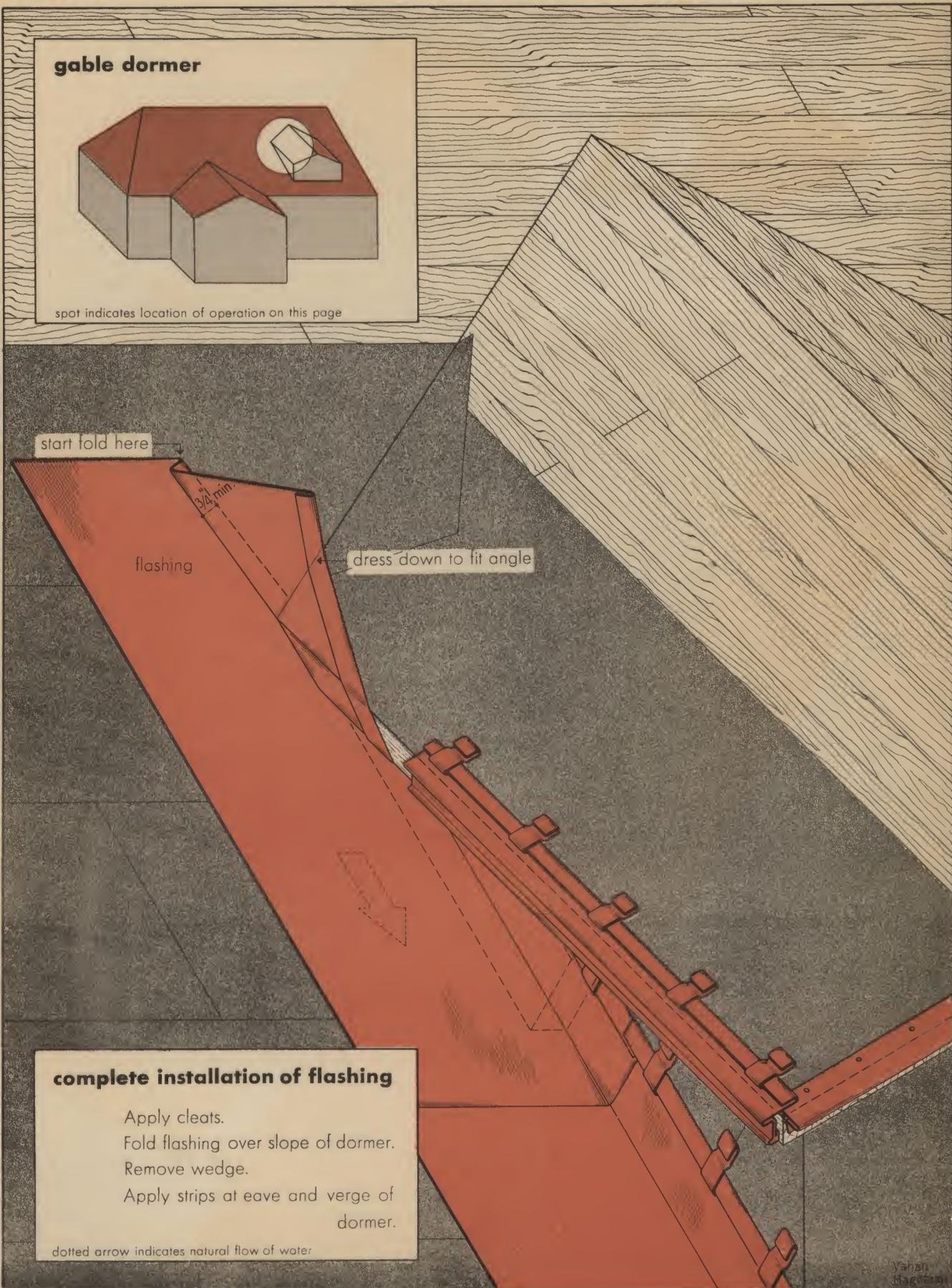


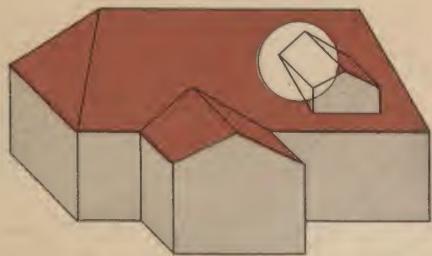










**gable dormer**

spot indicates location of operation on this page

See Plate 16

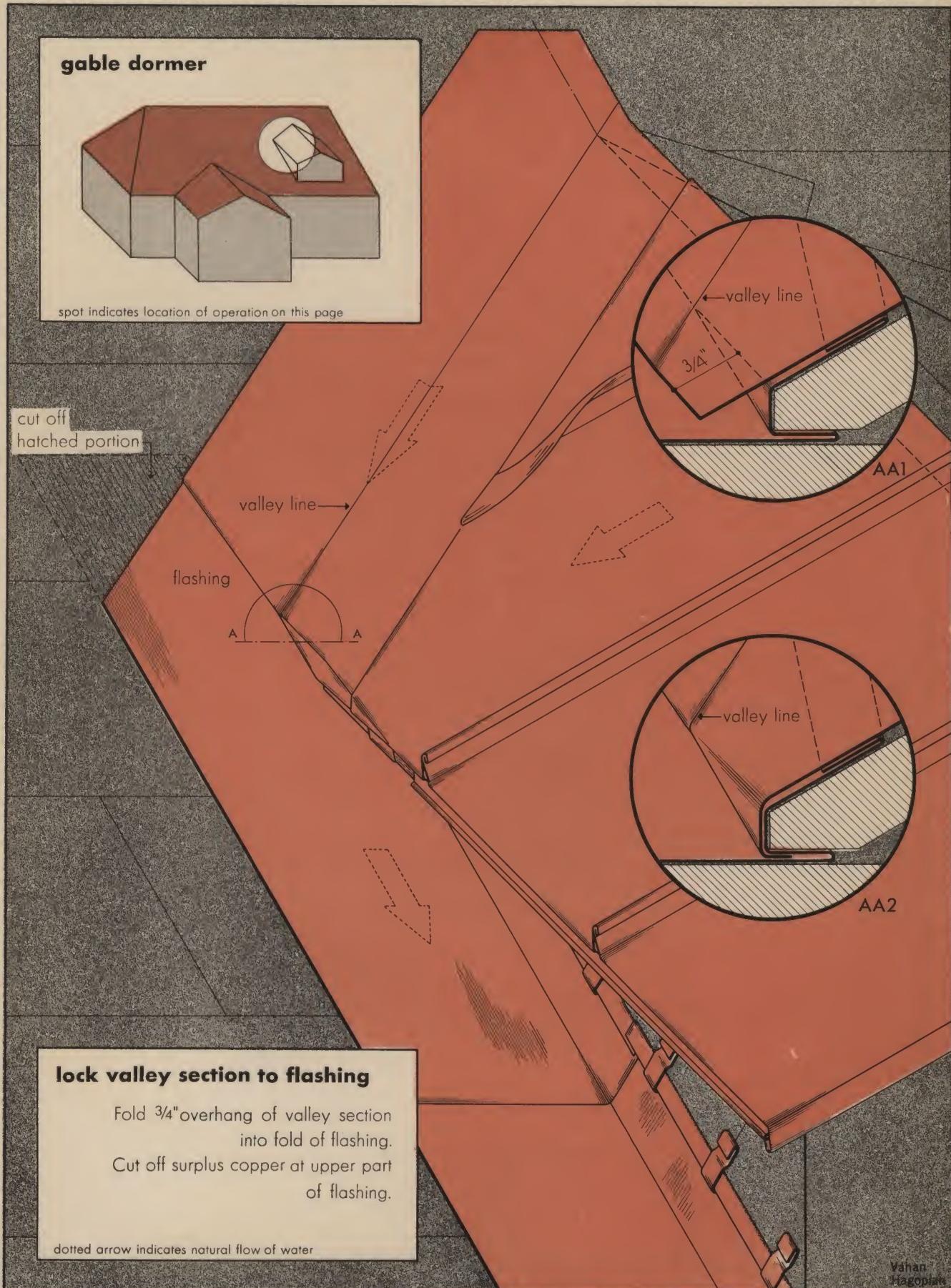
fold of flashing

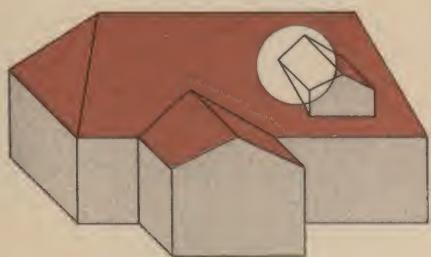
valley line

cut off  
hatched portion**set up valley**

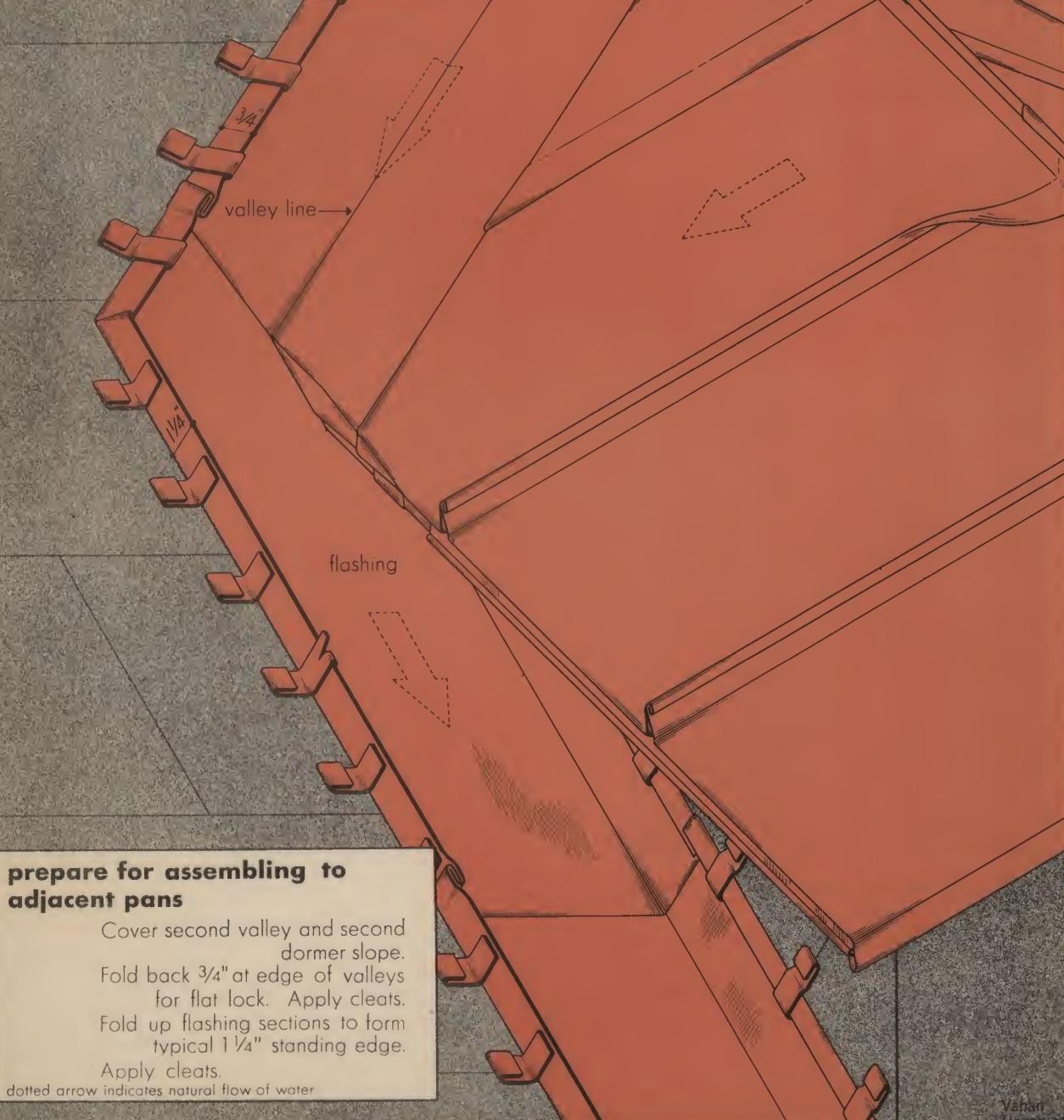
Form valley section into place.  
Install dormer pans.  
Lock dormer pans to valley.  
Cut off surplus copper at bottom  
of valley allowing  $\frac{3}{4}$ "  
overhang beyond fold  
of flashing.

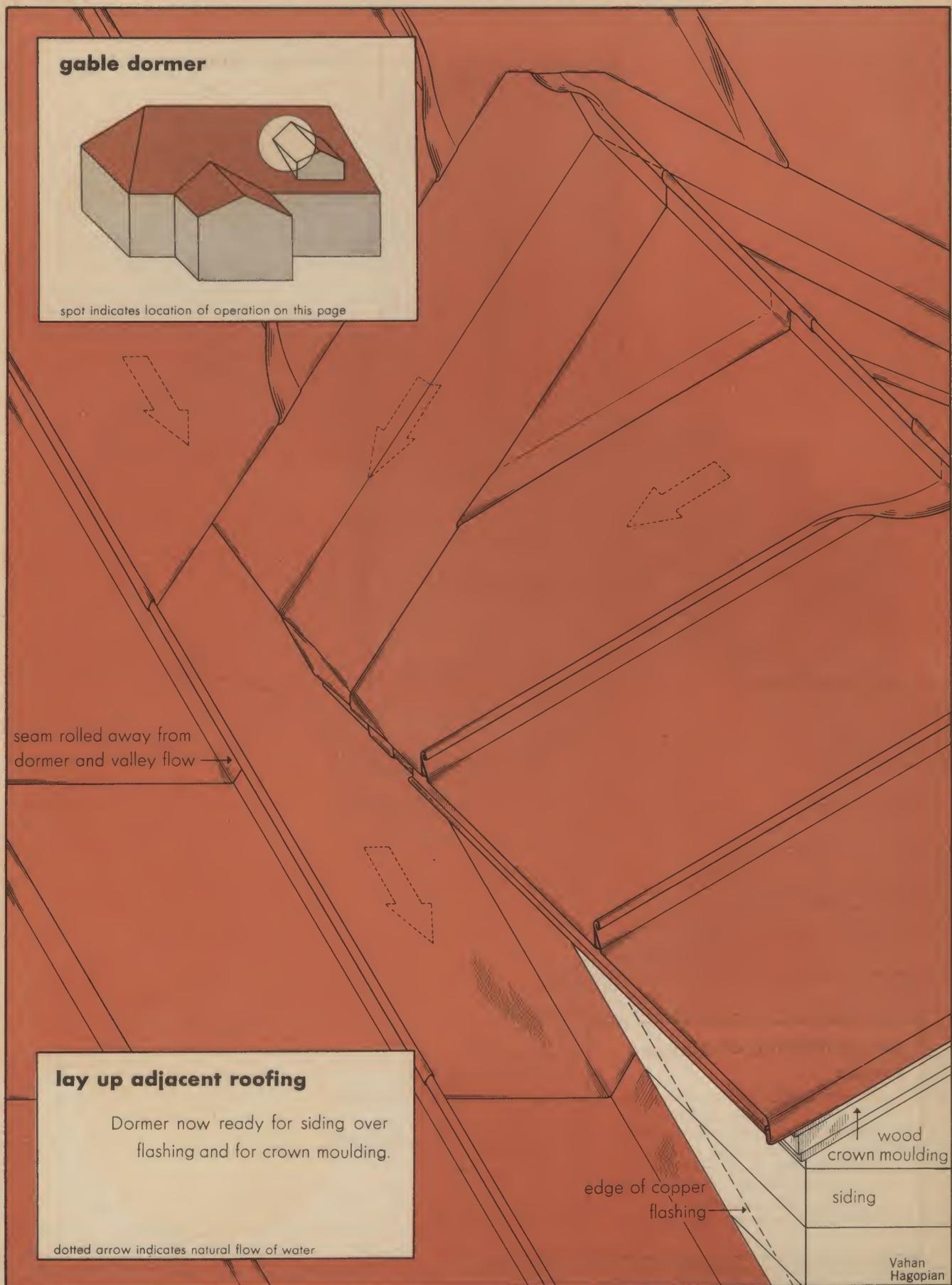
dotted arrow indicates natural flow of water

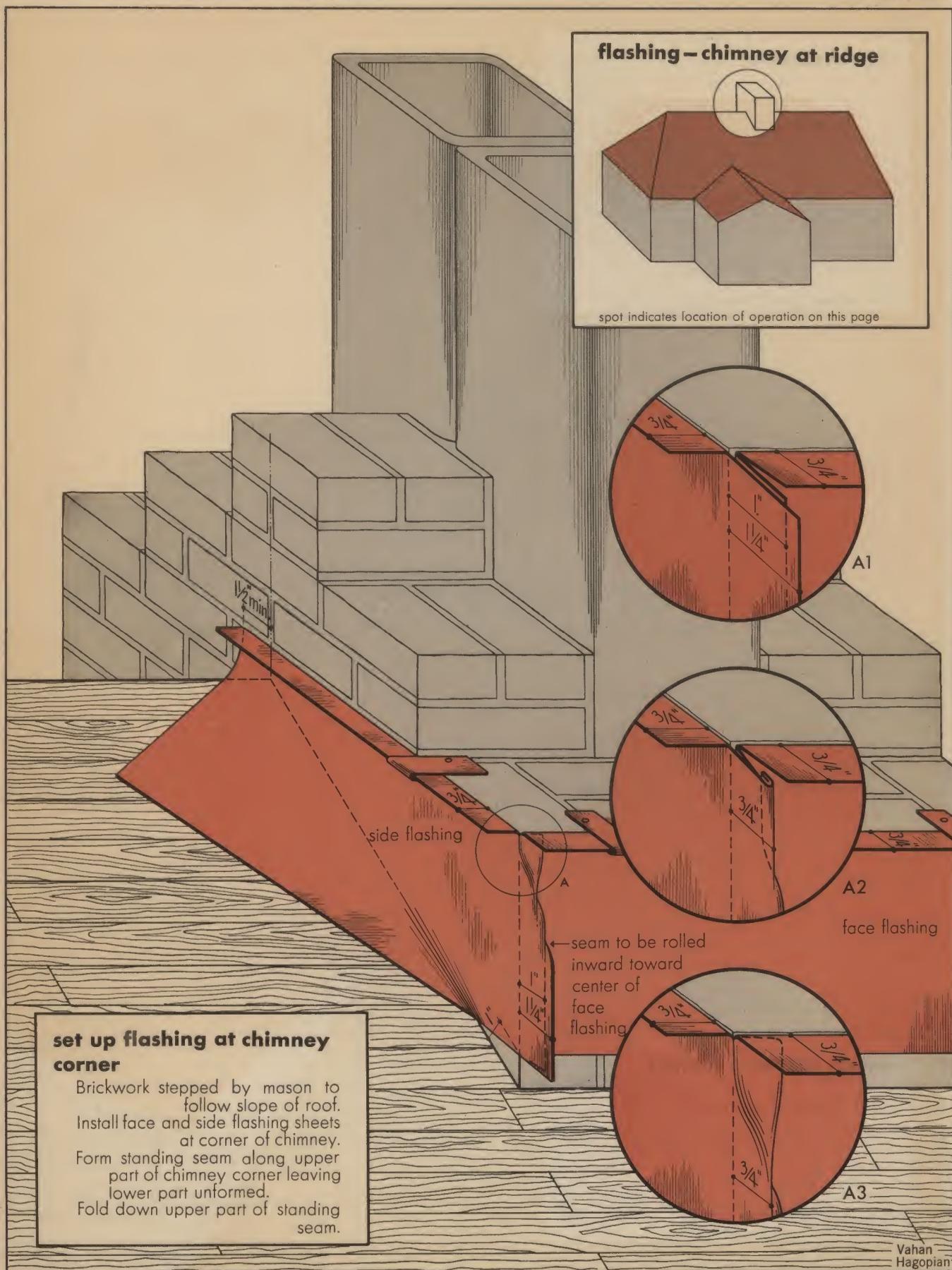


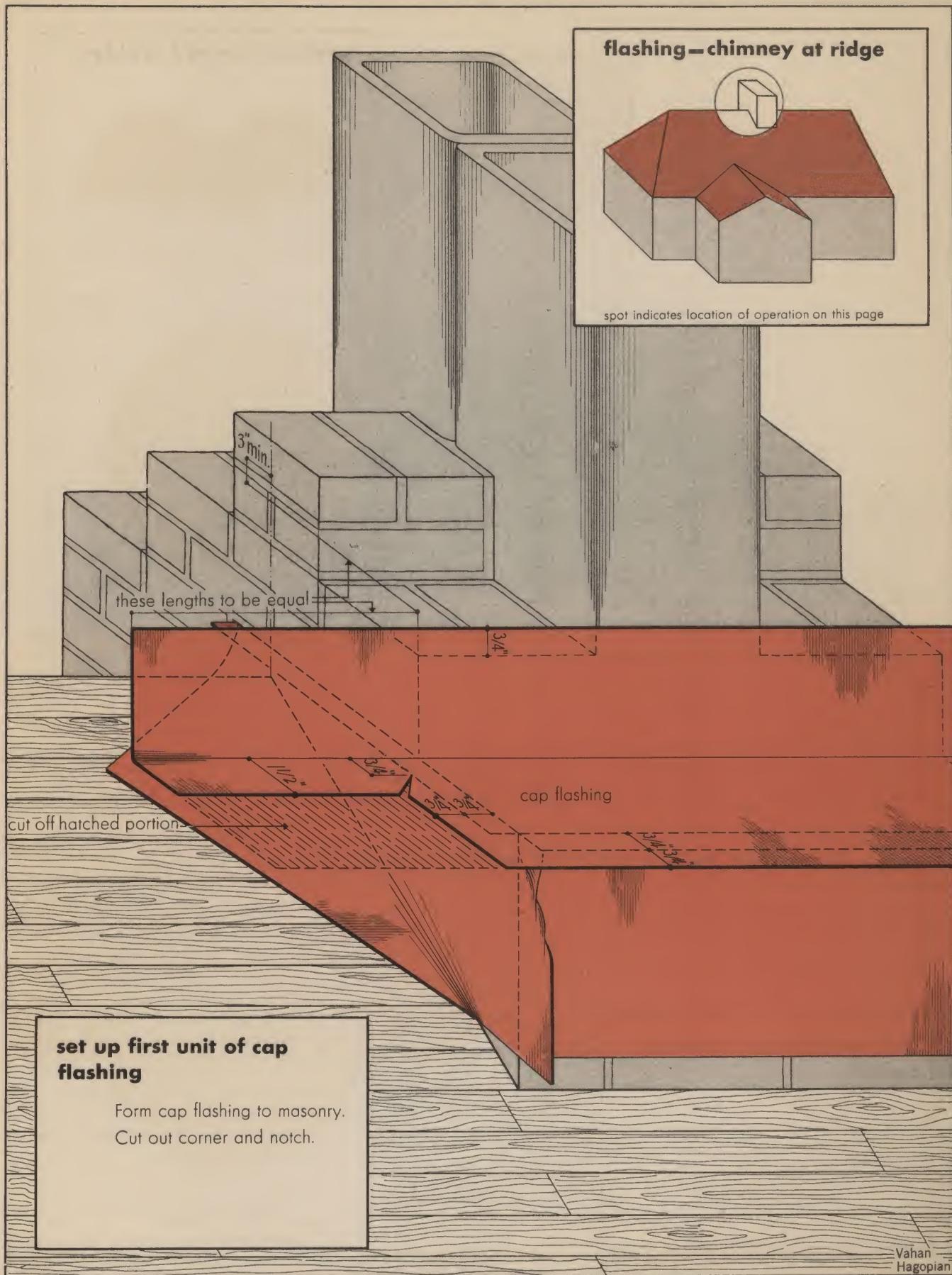
**gable dormer**

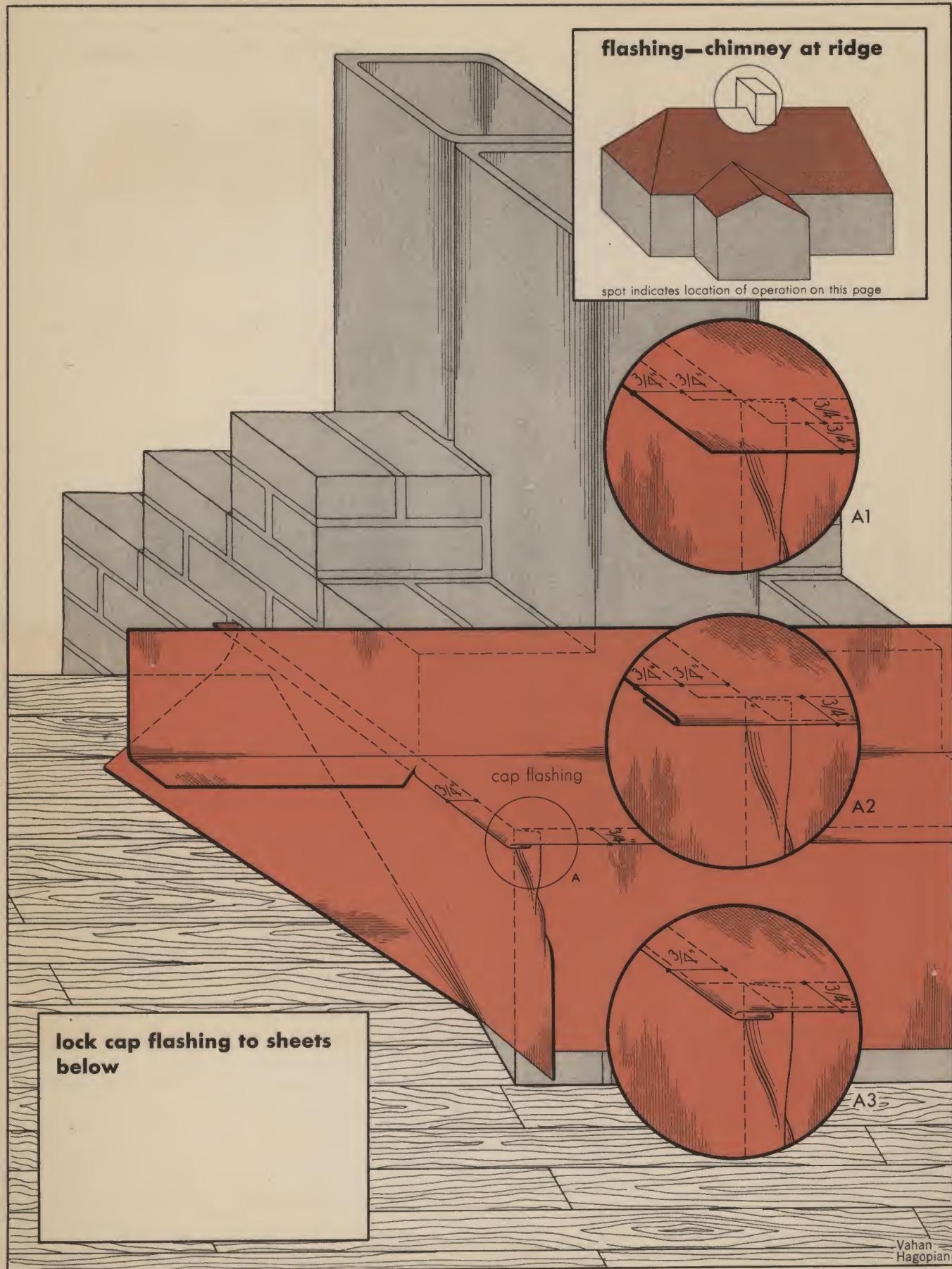
spot indicates location of operation on this page



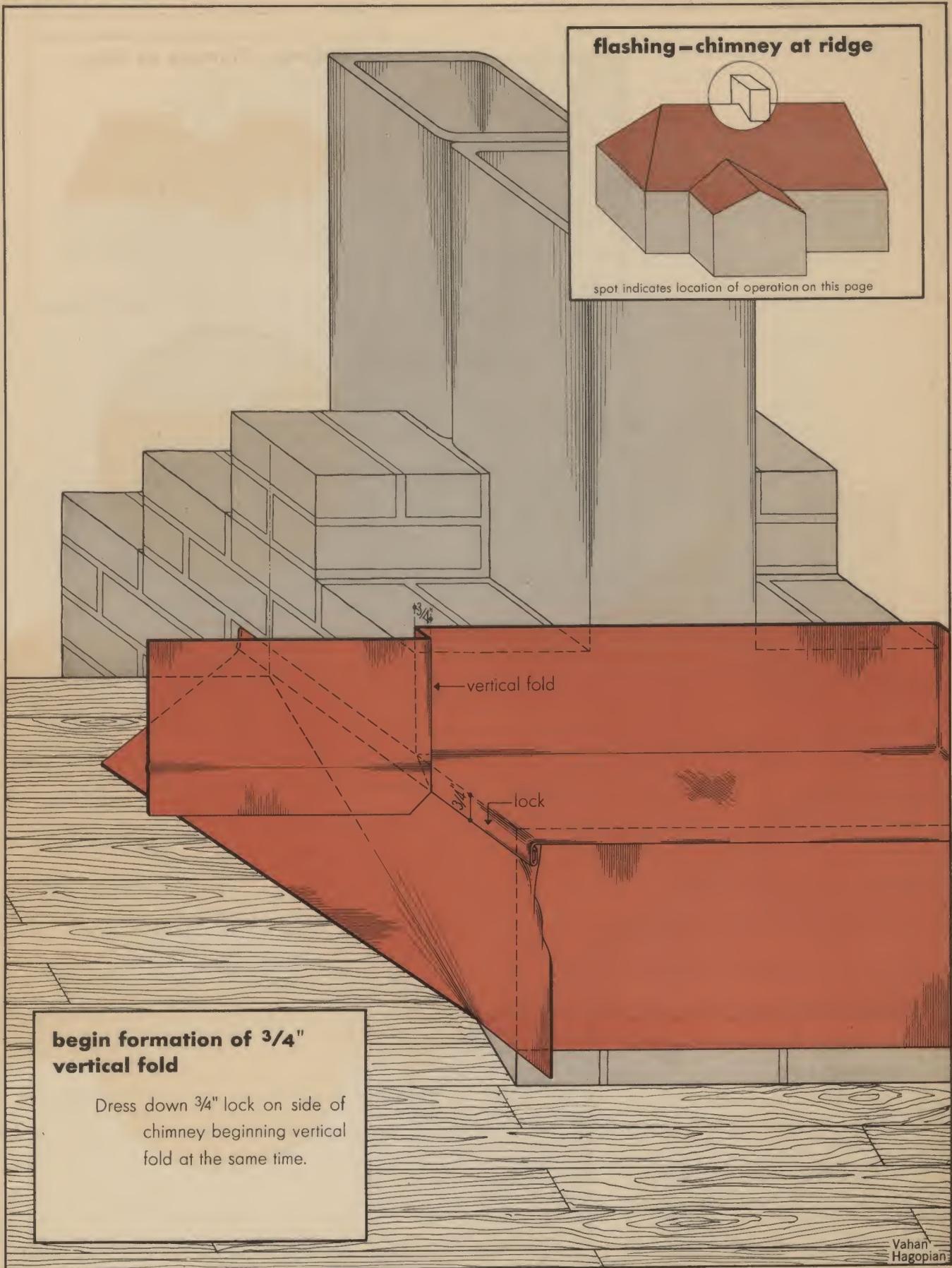


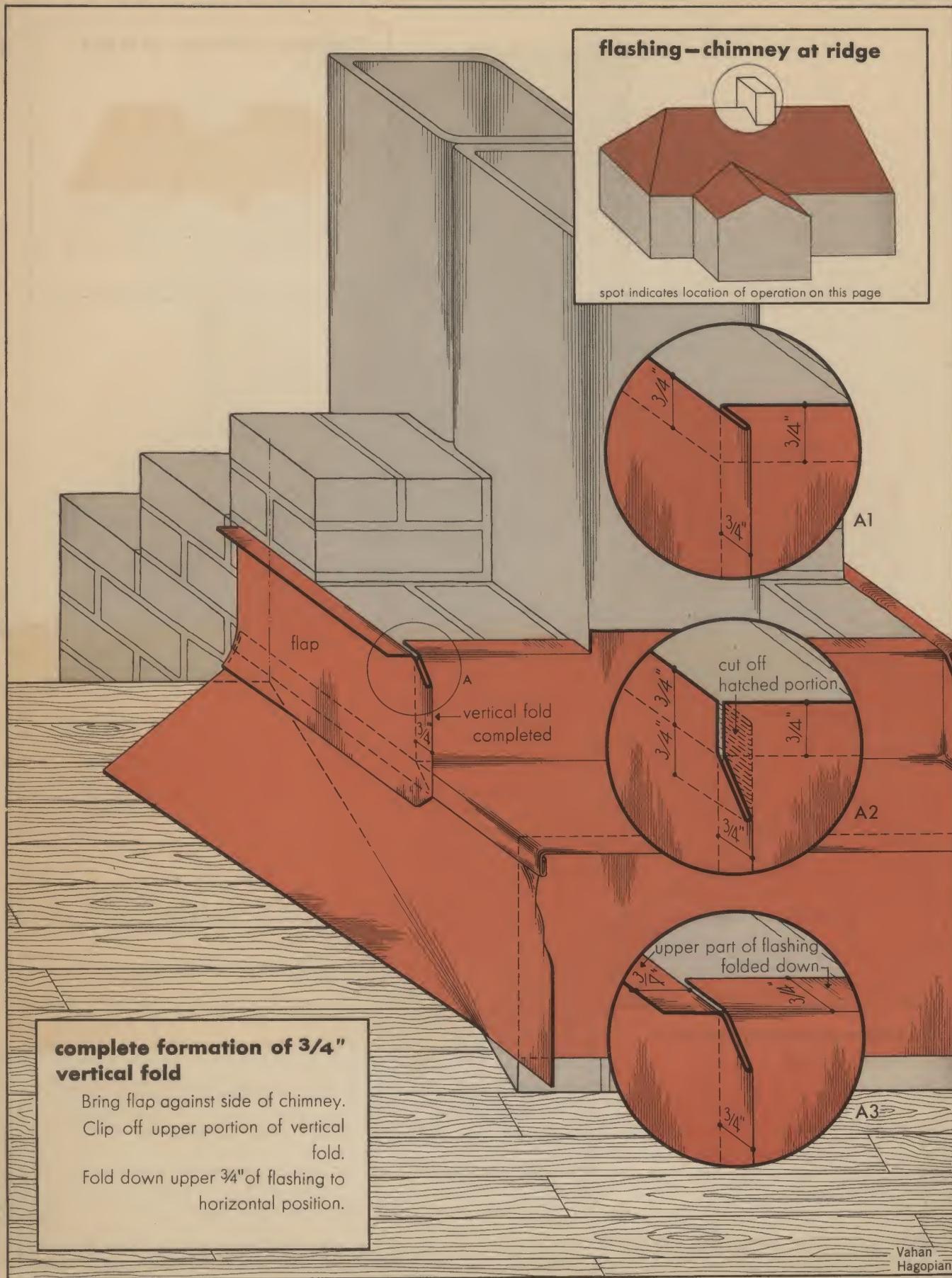


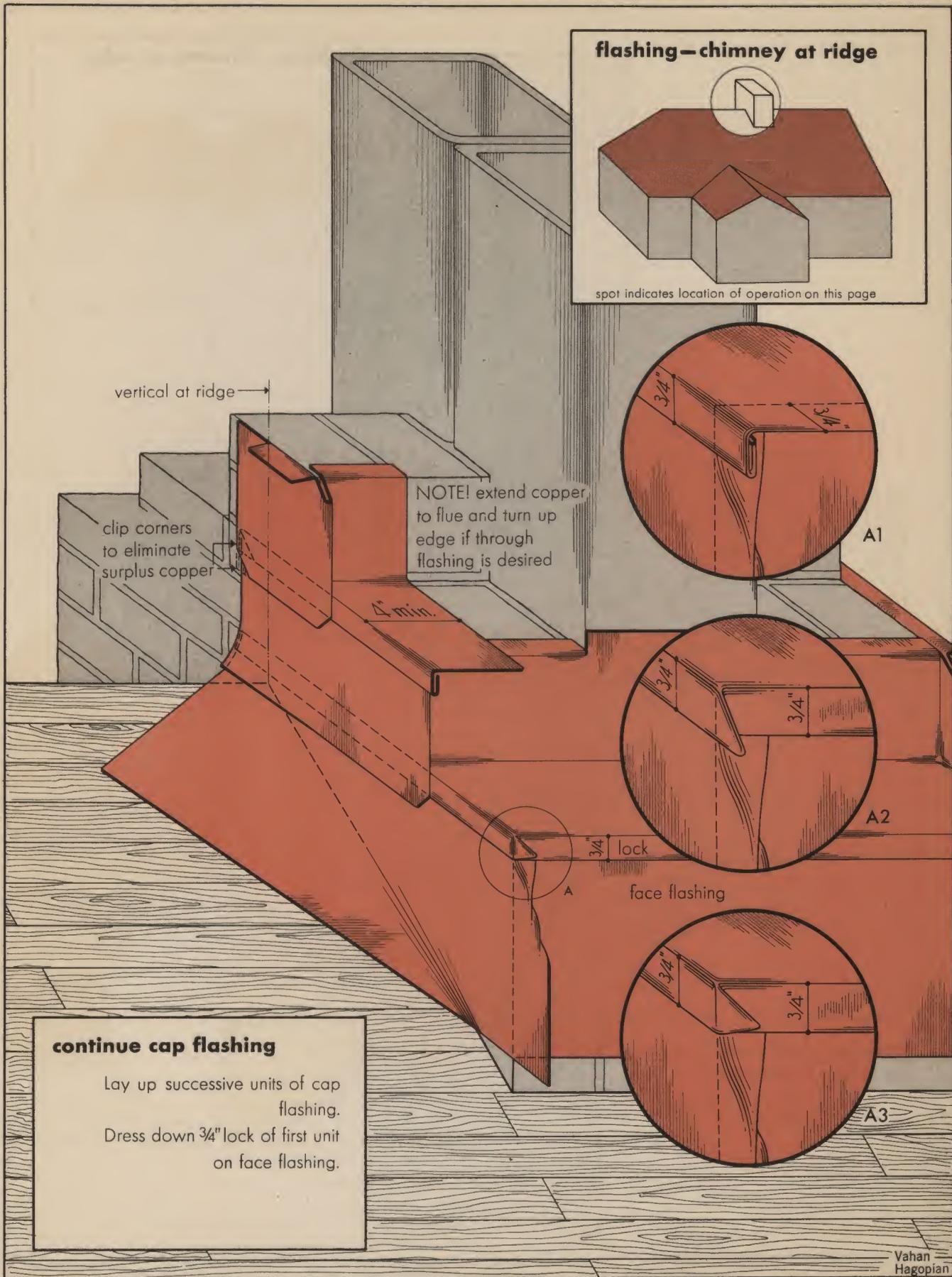


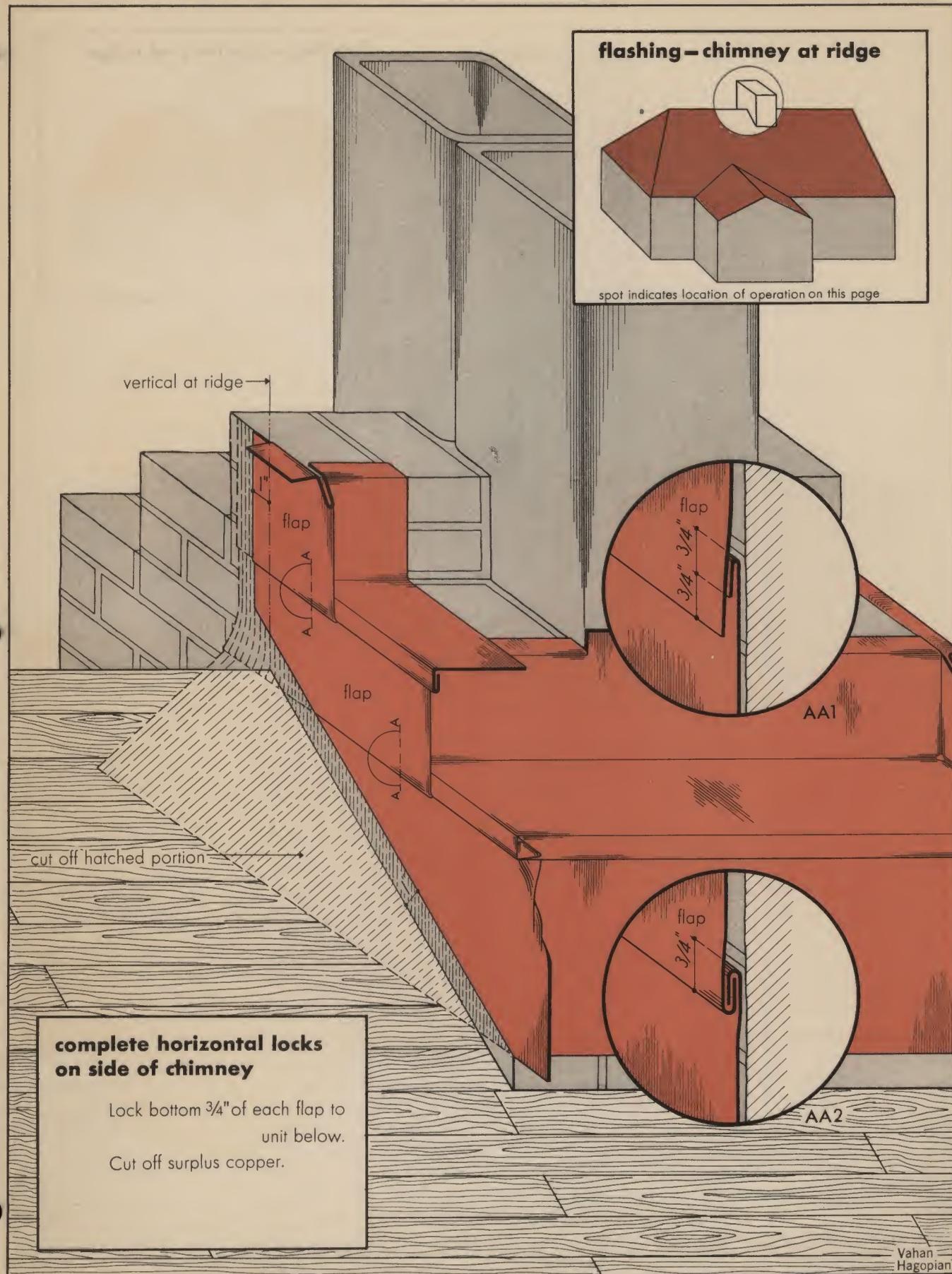


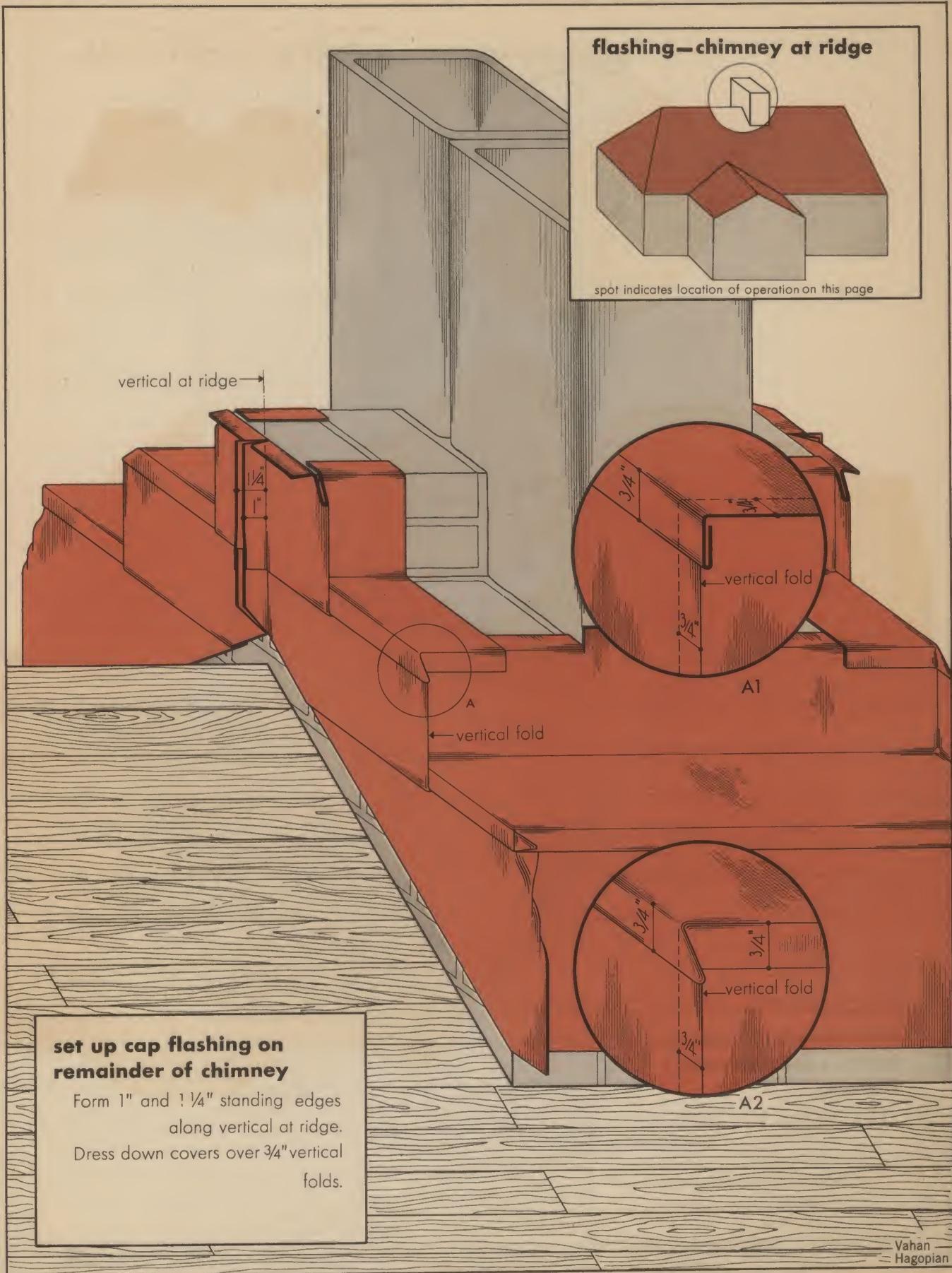
Vahan  
Hagopian

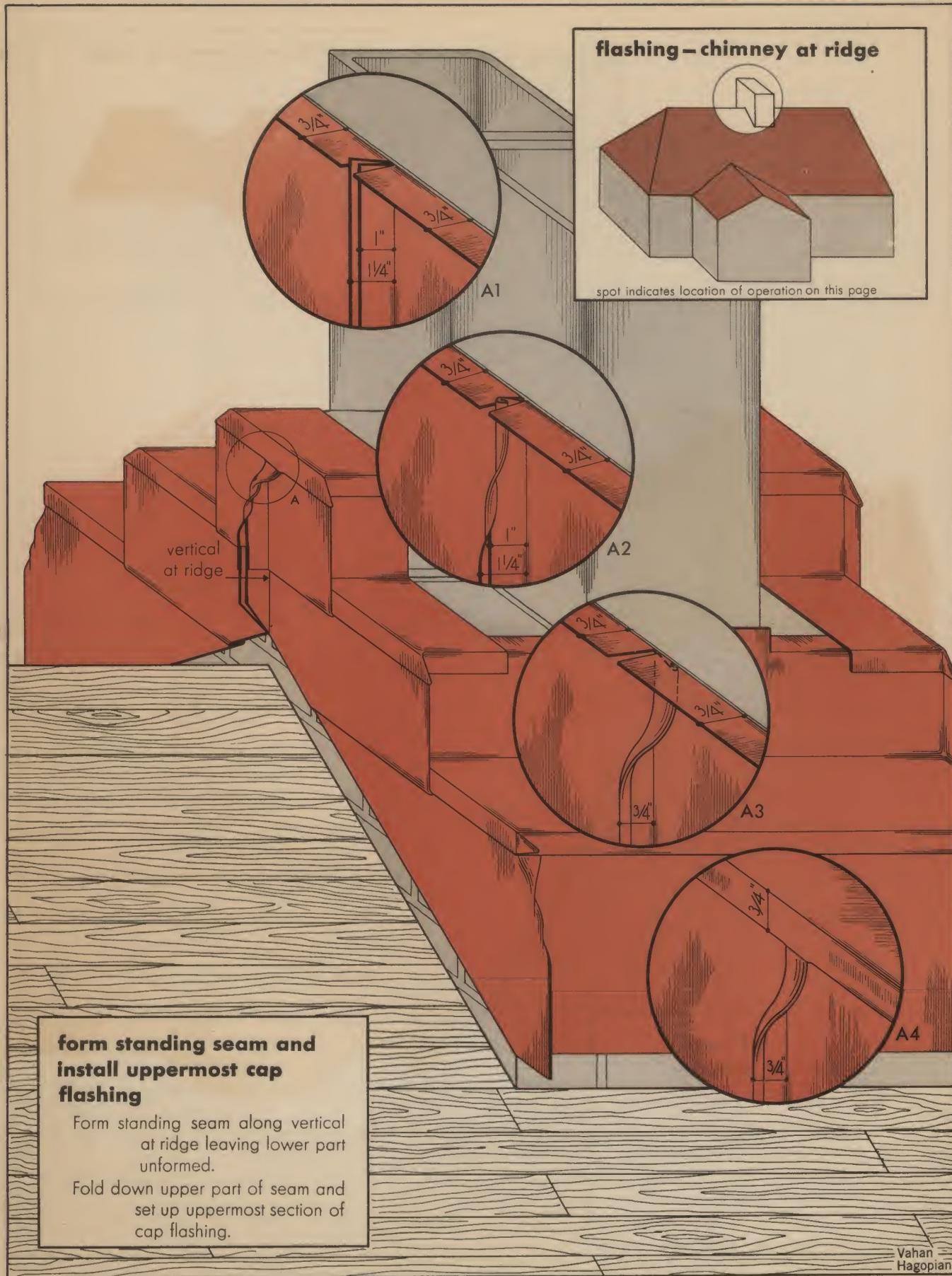


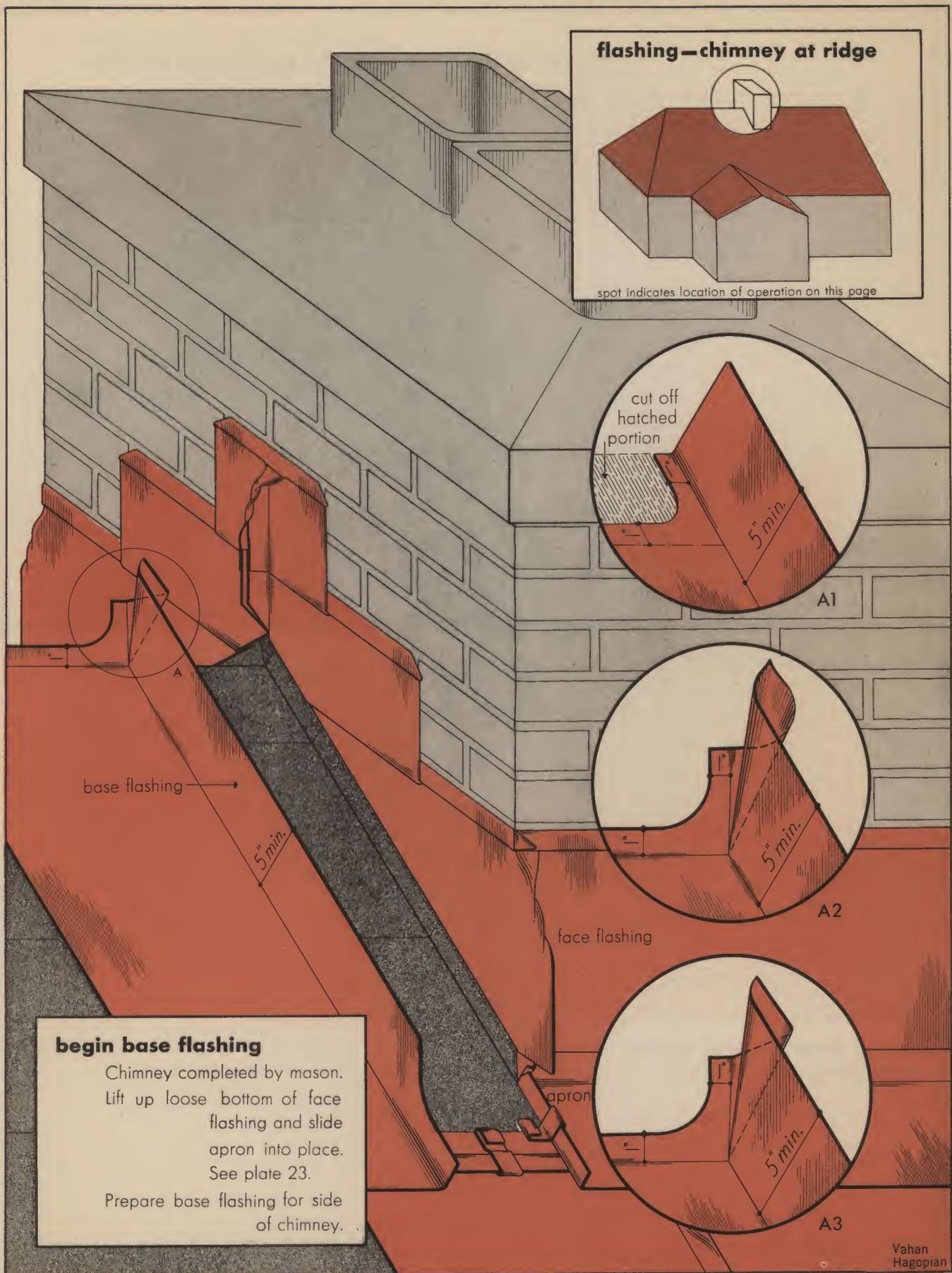


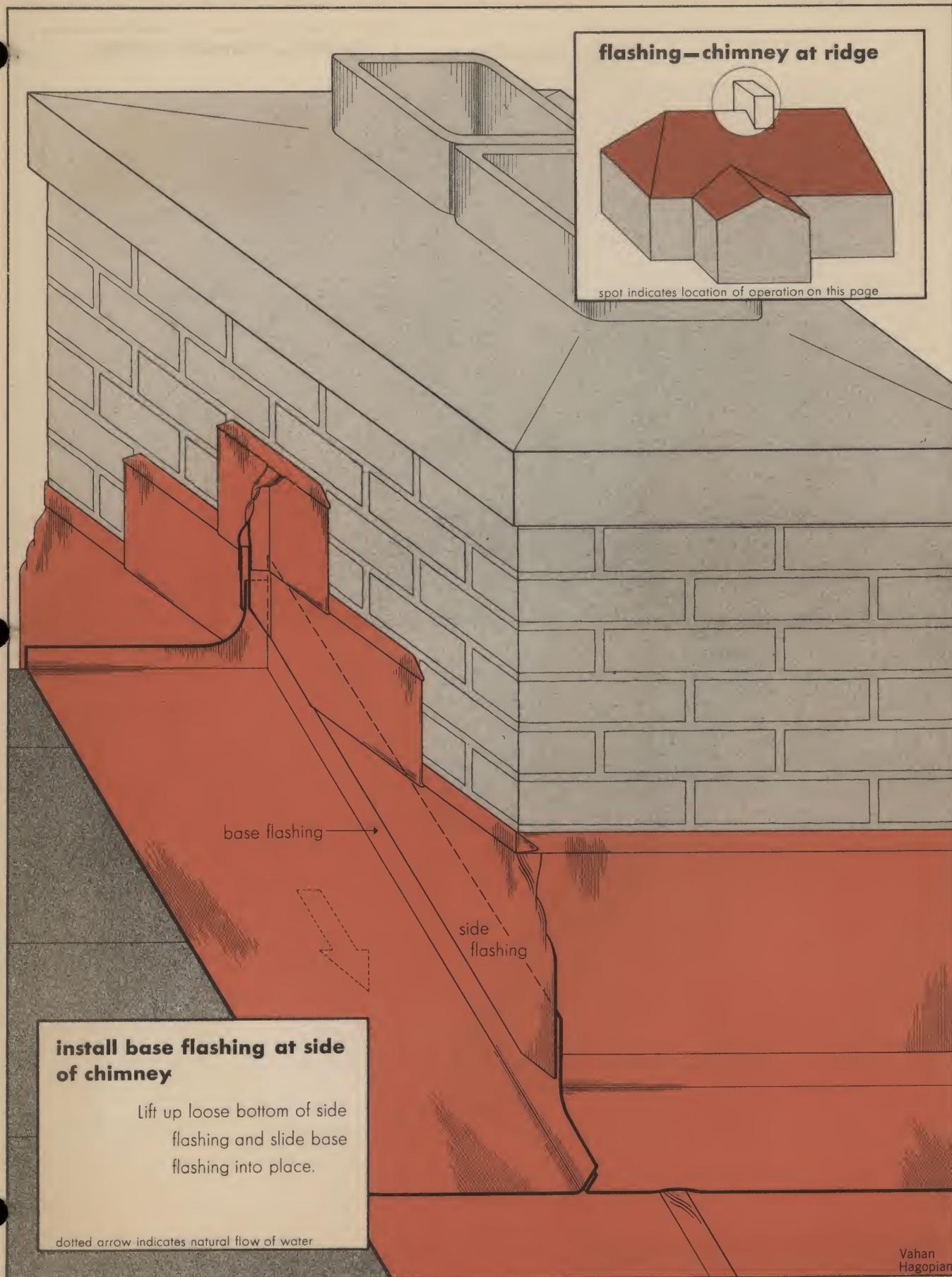


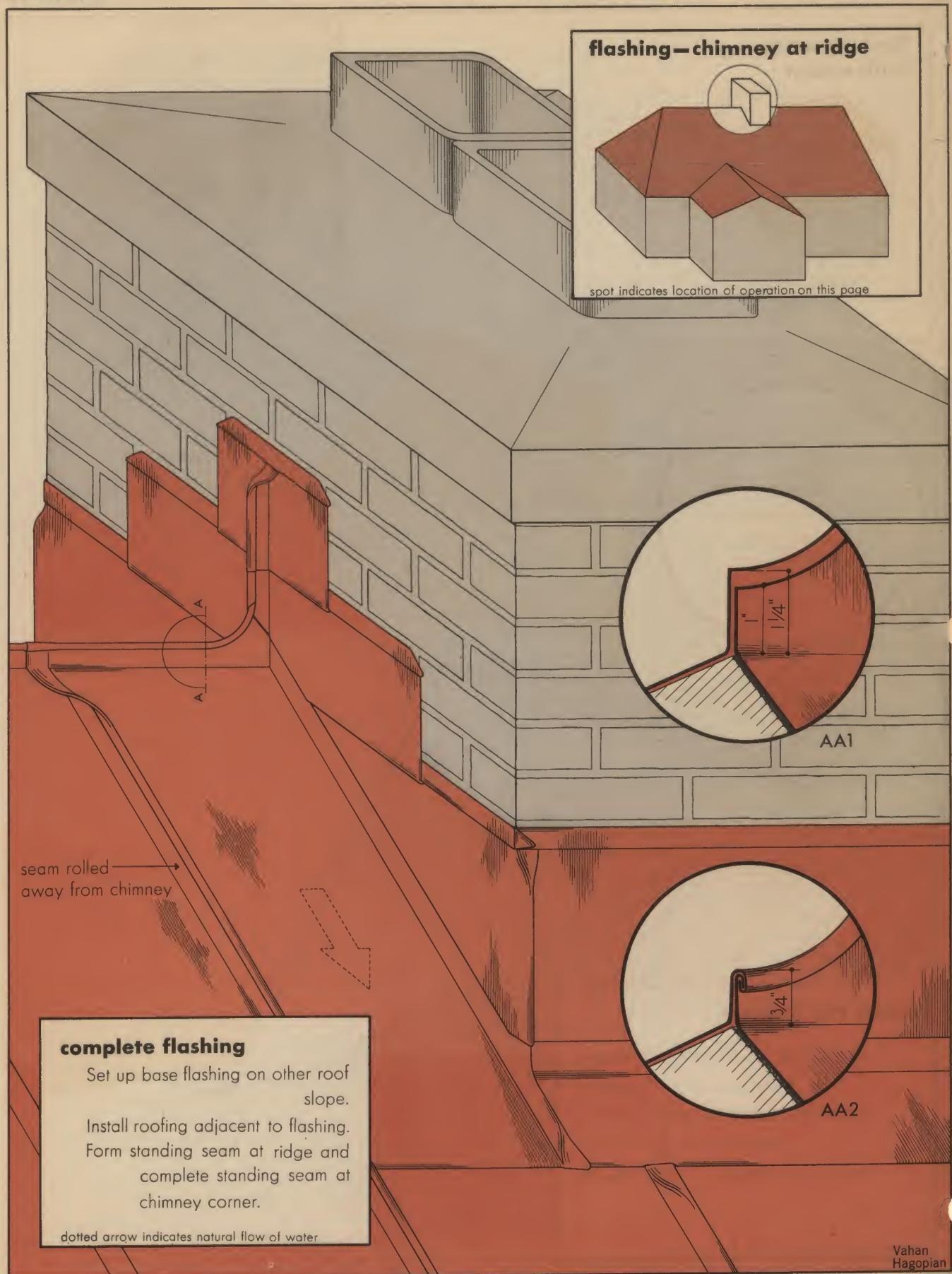




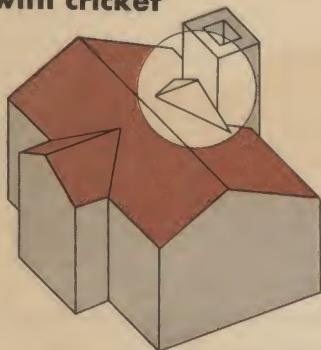








**flashing—chimney  
with cricket**



spot indicates location of operation on this page

seams to be  
rolled in direction of  
slope of roof

AA

**install cap flashing**

Cricket built by carpenter to project

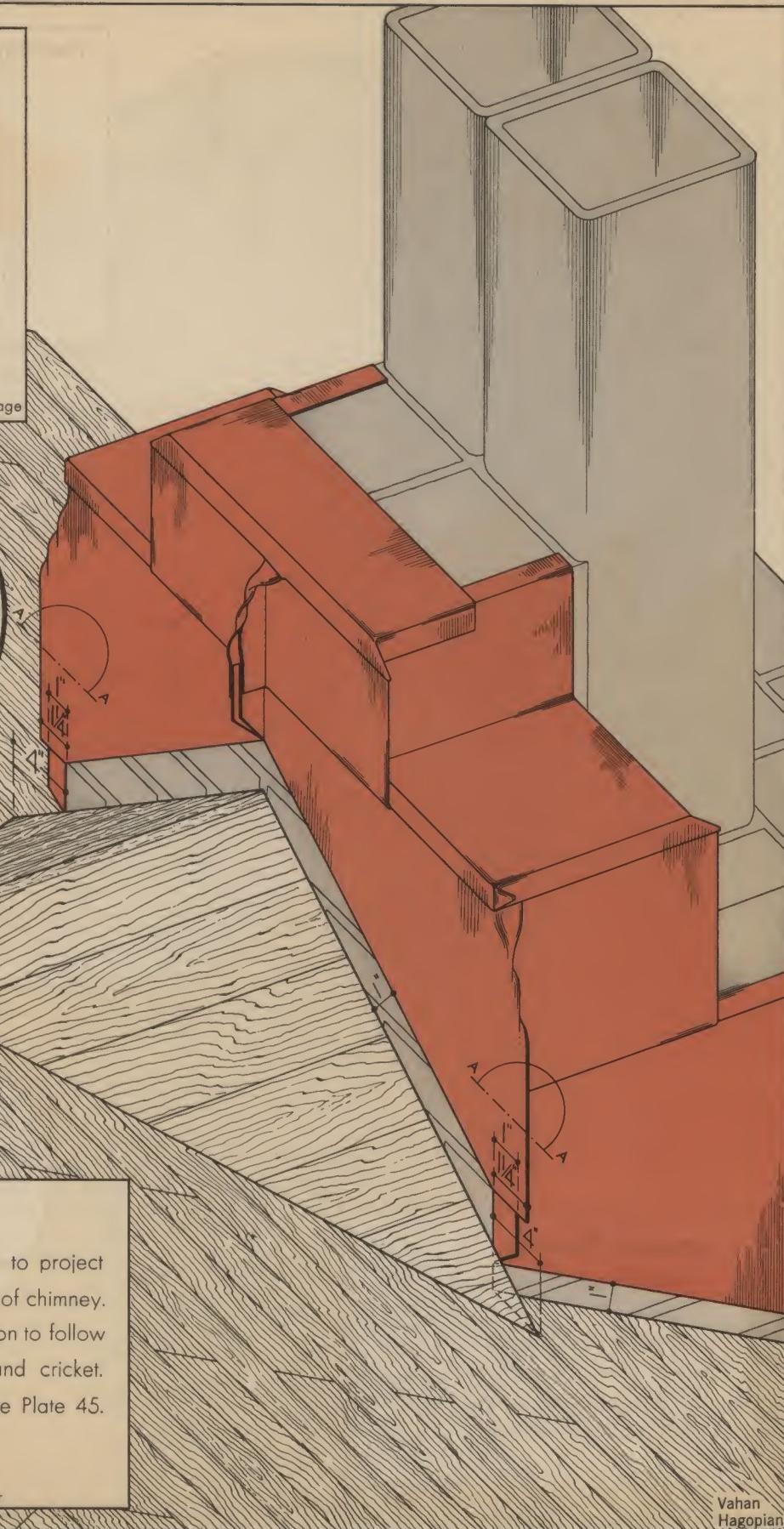
4" beyond sides of chimney.

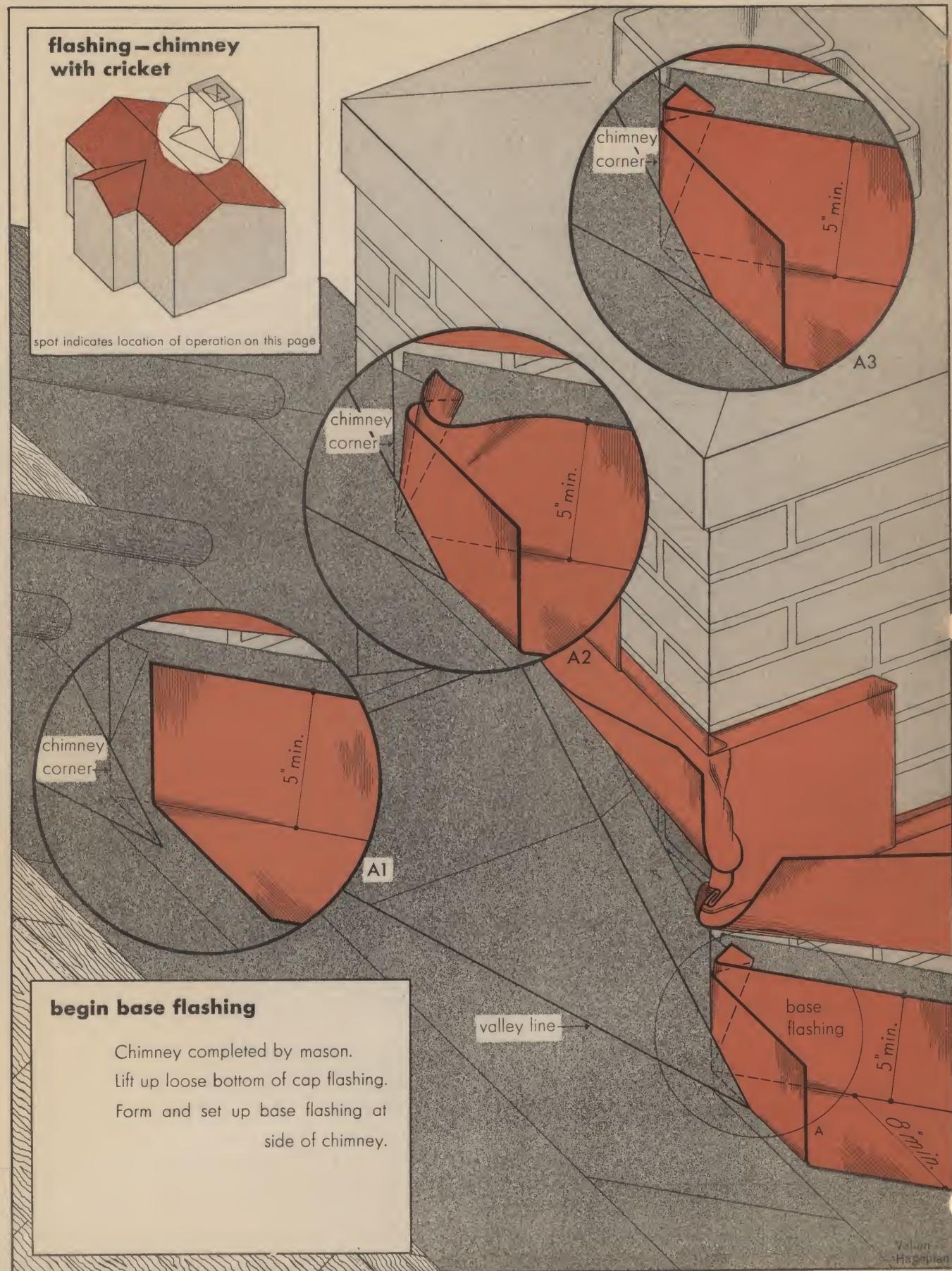
Brickwork stepped by mason to follow  
slope of roof and cricket.

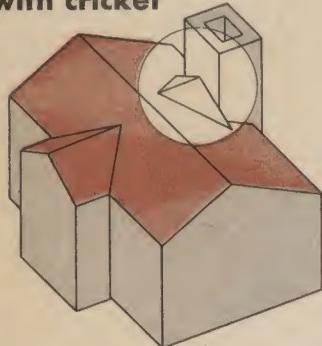
Set up cap flashing. See Plate 45.

dotted arrow indicates natural flow of water

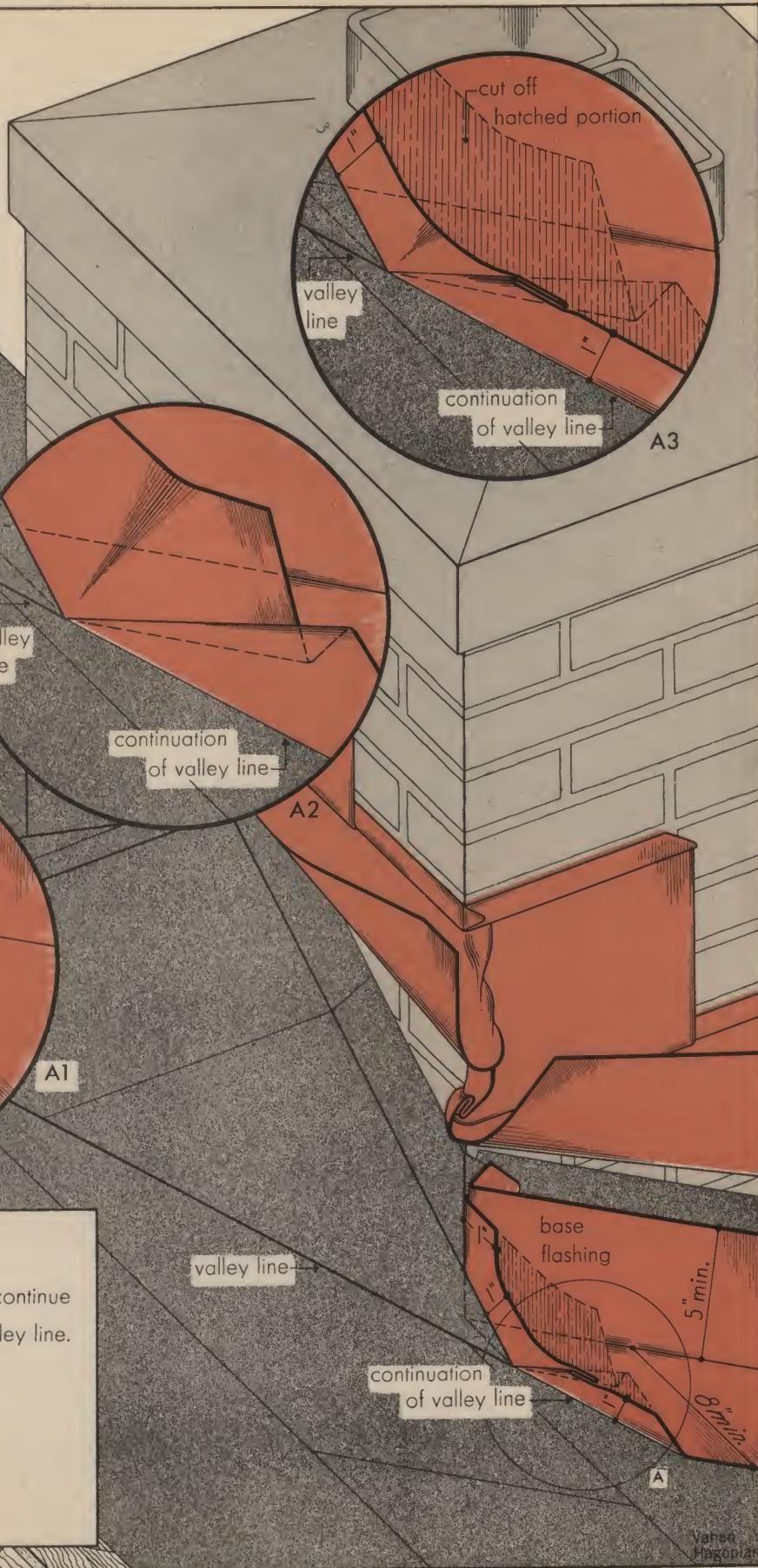
Vahan  
Hagopian





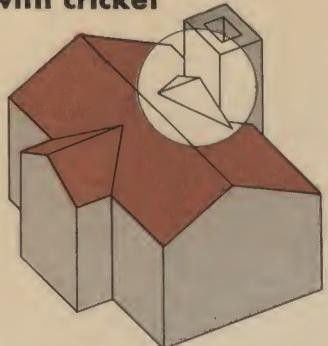
**flashing—chimney  
with cricket**


spot indicates location of operation on this page


**complete base flashing**

Fold base flashing to continue  
valley line.

Cut off surplus metal.

**flashing—chimney  
with cricket**

spot indicates location of operation on this page

cut off  
hatched portion

cricket  
ridge

valley  
line

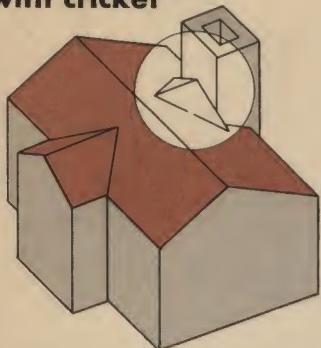
**install valley section**

Shape valley section into place.  
Cut off surplus copper.

dotted arrow indicates natural flow of water

cut off hatched  
portion  
5" min.

Marshall  
Haagman

**flashing—chimney  
with cricket**

spot indicates location of operation on this page

cricket ridge  
cut off hatched portion

base flashing  
5" min.

5" min.

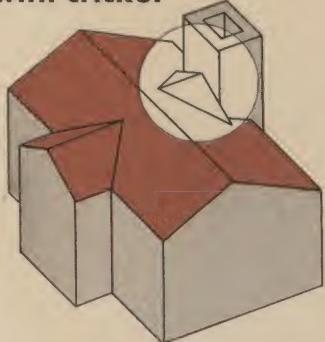
8"

**continue base flashing over  
slope of cricket**

Cover first slope of cricket.  
Cut off surplus copper.

dotted arrow indicates natural flow of water

Verona  
Flavor

**flashing—chimney  
with cricket**


spot indicates location of operation on this page

**cut off  
hatched portion**

valley line

cricket  
ridge

valley  
line

**complete cricket**

Install second valley and second cricket slope. Assemble adjacent pans to valleys. See Plate 22.

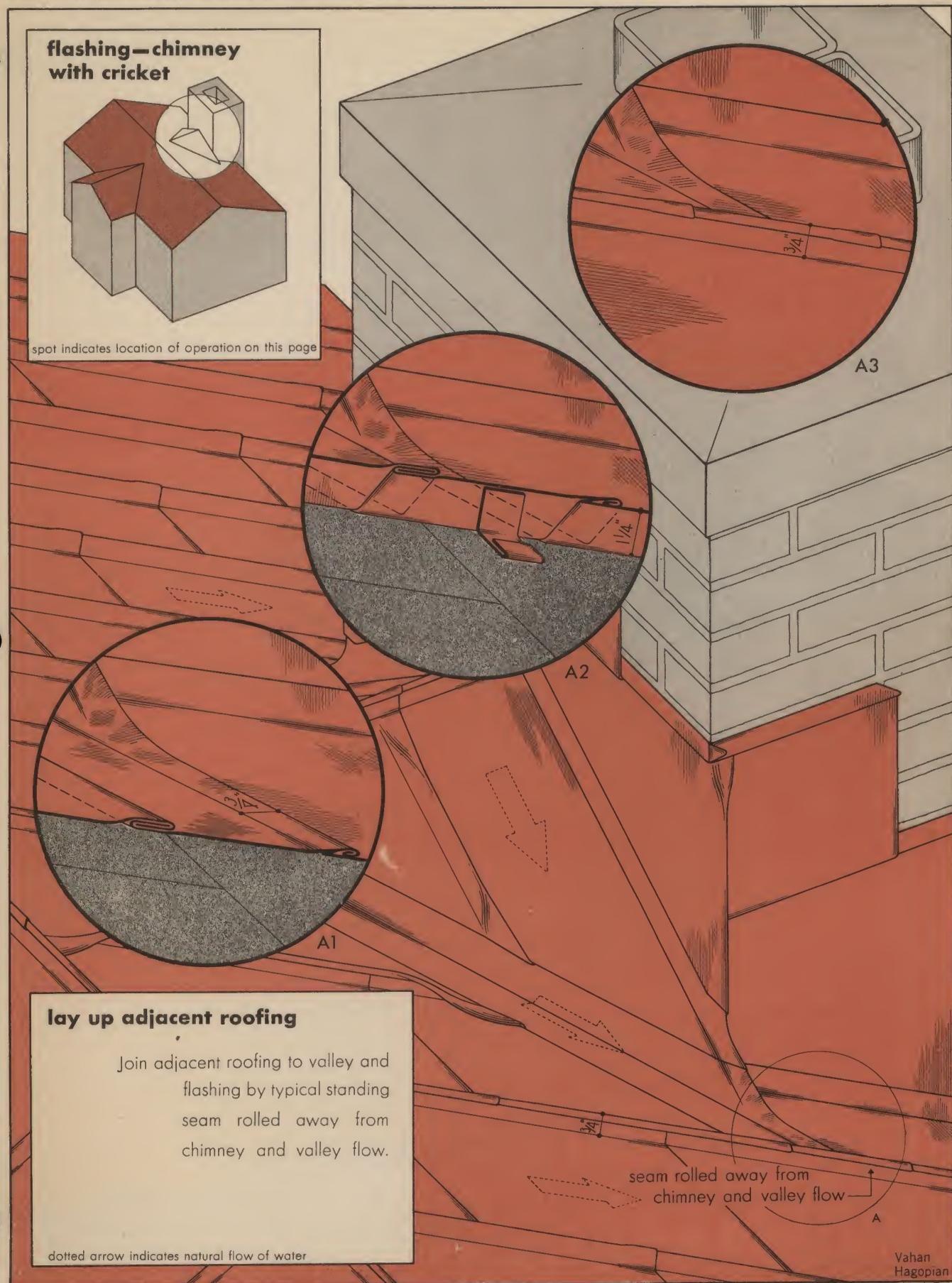
Complete seams above ridge and at lower corners of chimney. See Plate 48.

dotted arrow indicates natural flow of water

**cut off hatched portion**

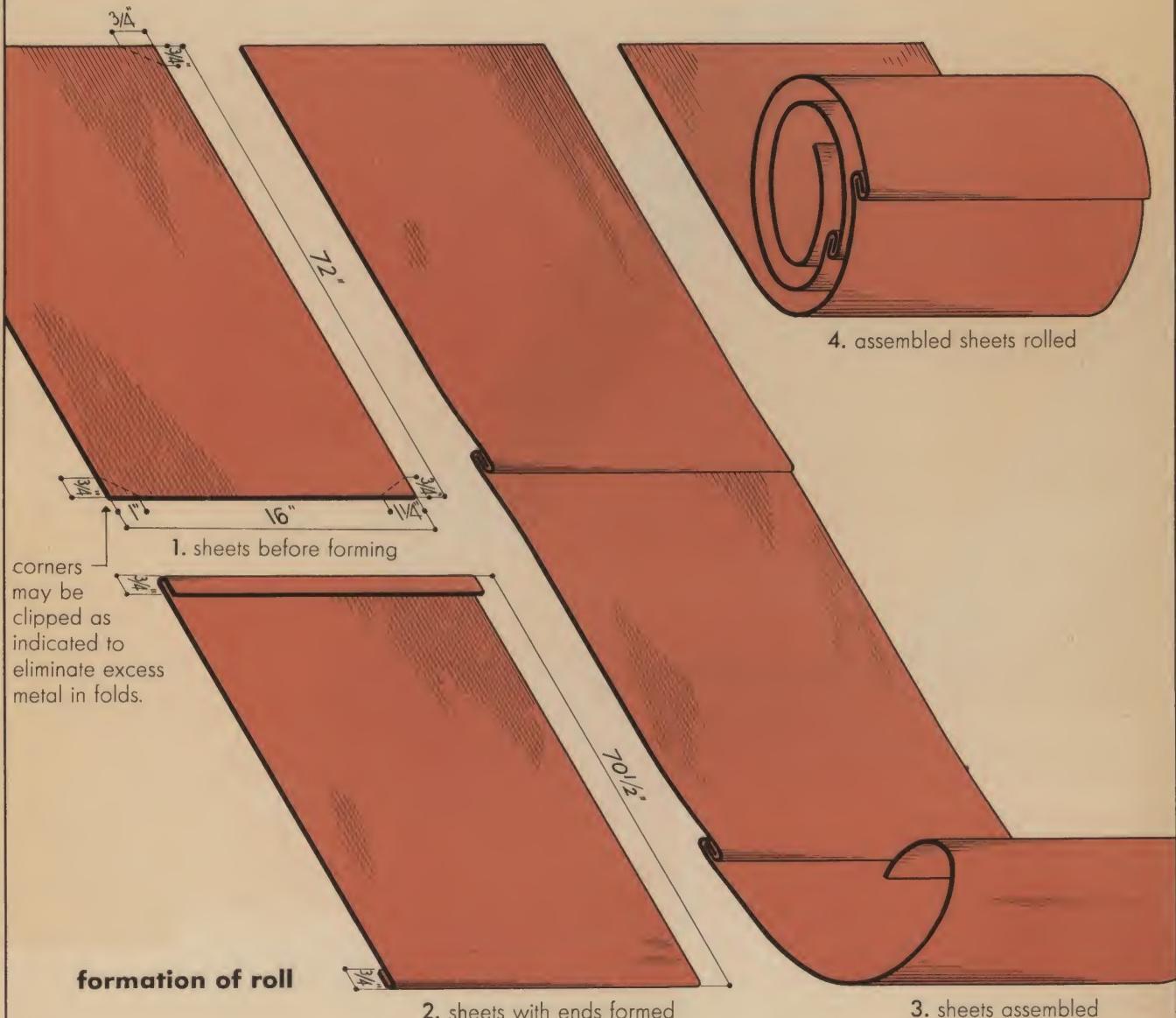
base  
flashing

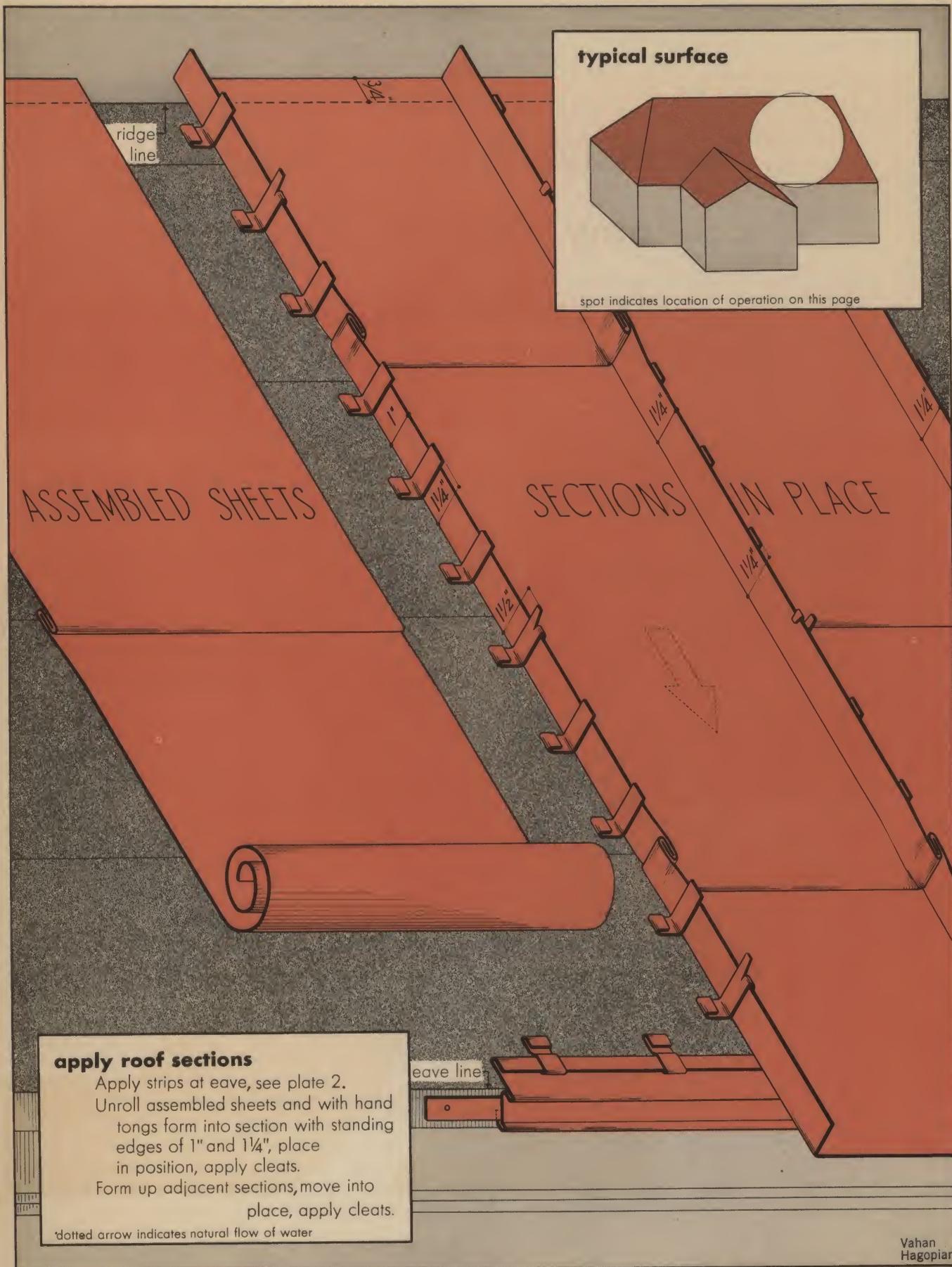
roll and flatten  
standing seam away  
from flow of  
water

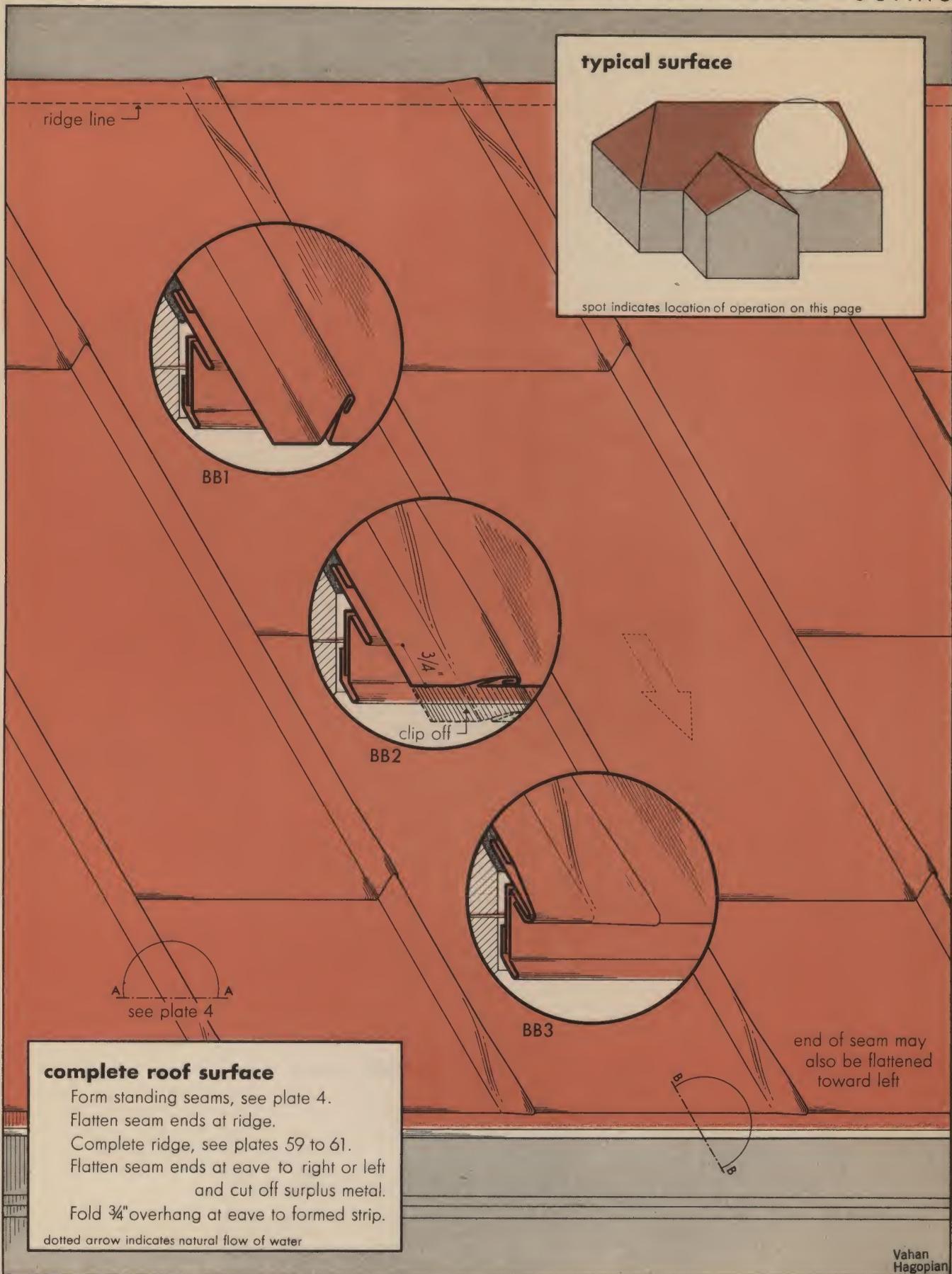


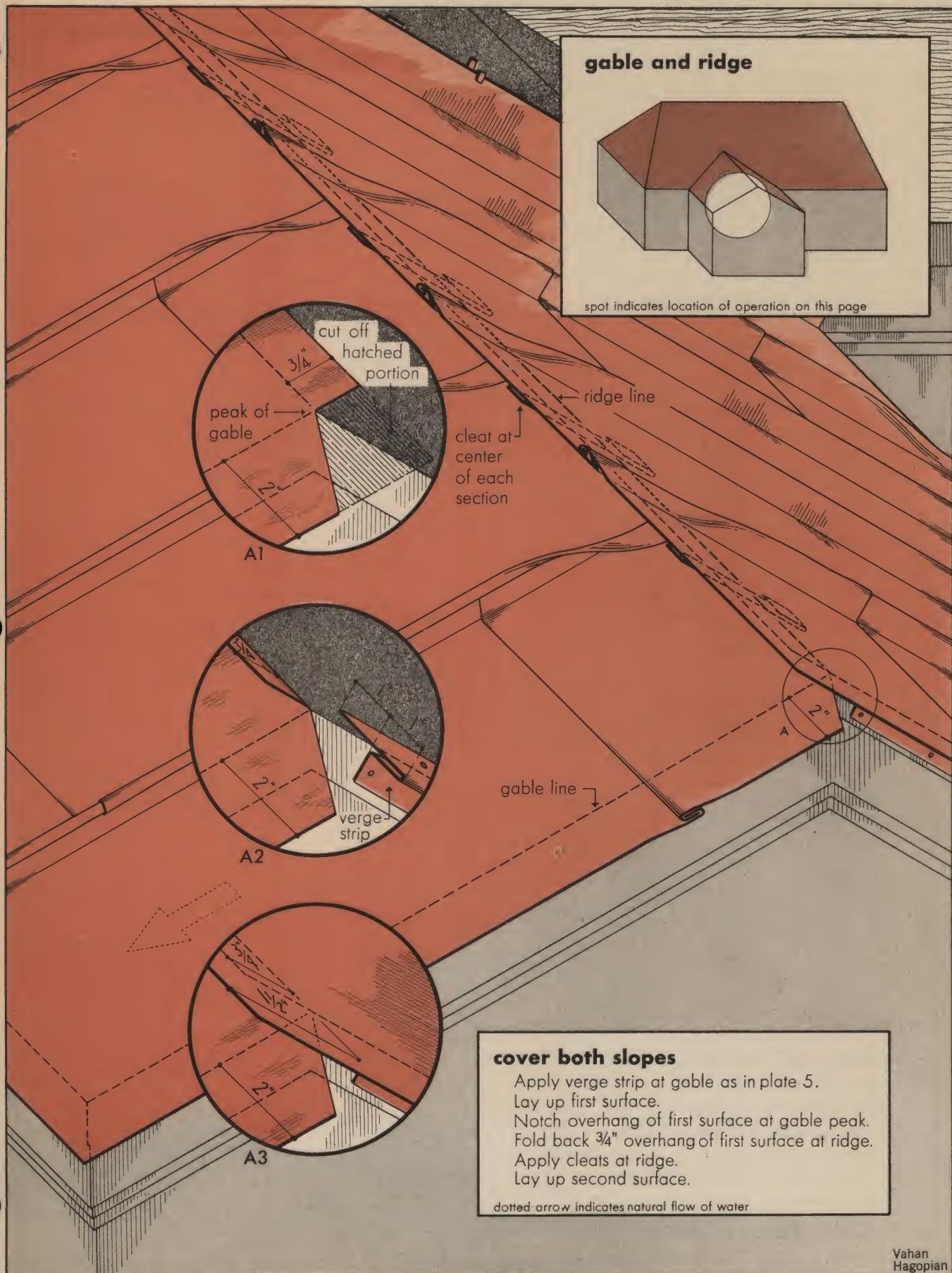
# Successive Steps in Laying Economy Copper Roofing

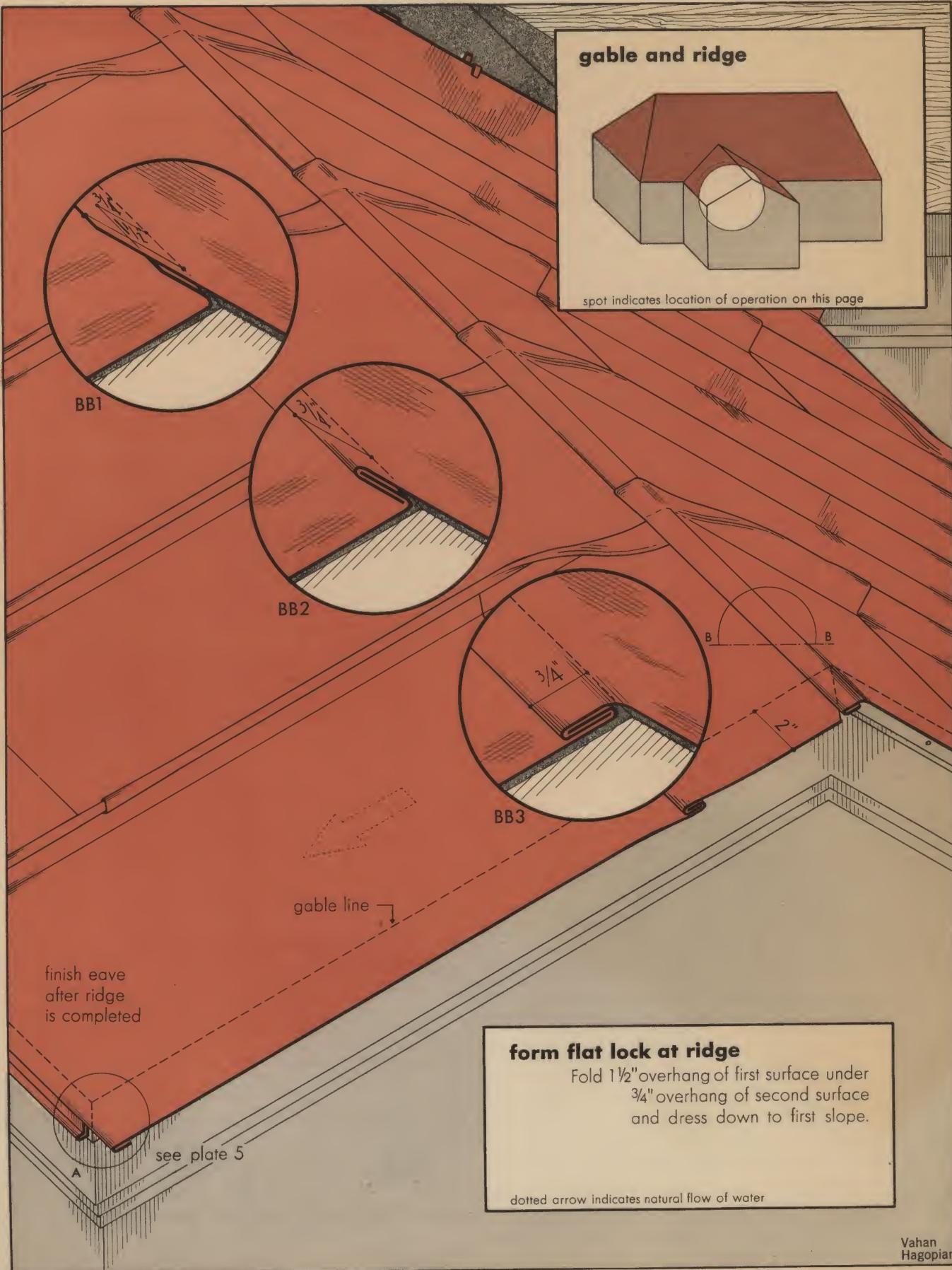
by the Roll Method





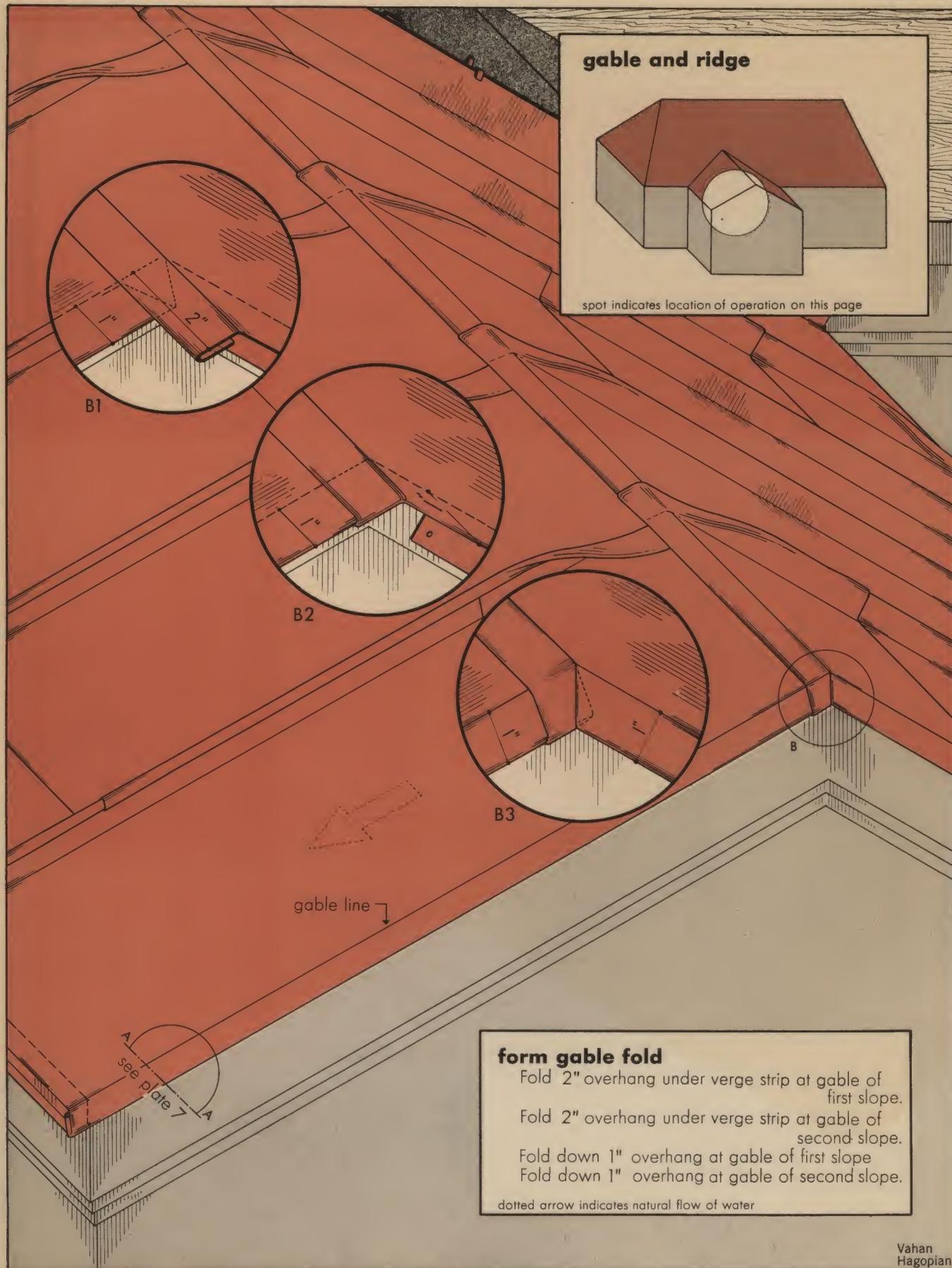






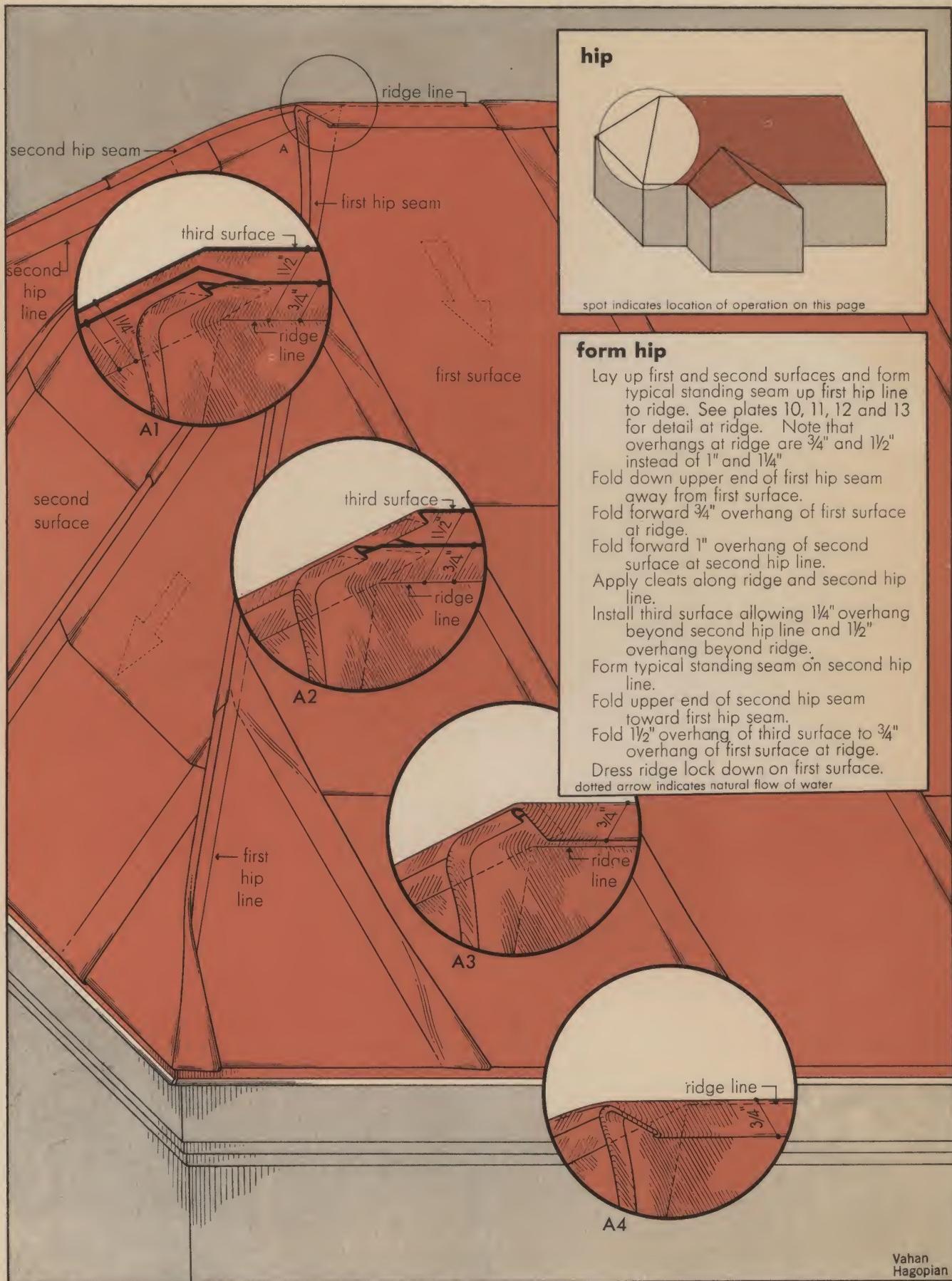
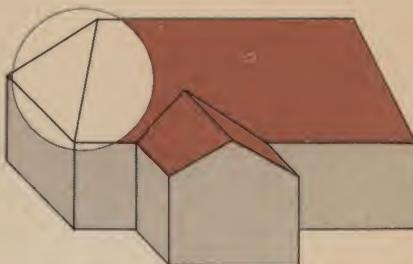
See plates 5, 6, 7, 8, and 9 in connection with plates 59, 60 and 61

Vahan  
Hagopian



See plates 5, 6, 7, 8, and 9 in connection with plates 59, 60 and 61

Vahan  
Hagopian

**hip**

spot indicates location of operation on this page

**form hip**

Lay up first and second surfaces and form typical standing seam up first hip line to ridge. See plates 10, 11, 12 and 13 for detail at ridge. Note that overhangs at ridge are  $\frac{3}{4}$ " and  $1\frac{1}{2}$ " instead of 1" and  $\frac{1}{4}$ ".

Fold down upper end of first hip seam away from first surface.

Fold forward  $\frac{3}{4}$ " overhang of first surface at ridge.

Fold forward 1" overhang of second surface at second hip line.

Apply cleats along ridge and second hip line.

Install third surface allowing  $\frac{1}{4}$ " overhang beyond second hip line and  $1\frac{1}{2}$ " overhang beyond ridge.

Form typical standing seam on second hip line.

Fold upper end of second hip seam toward first hip seam.

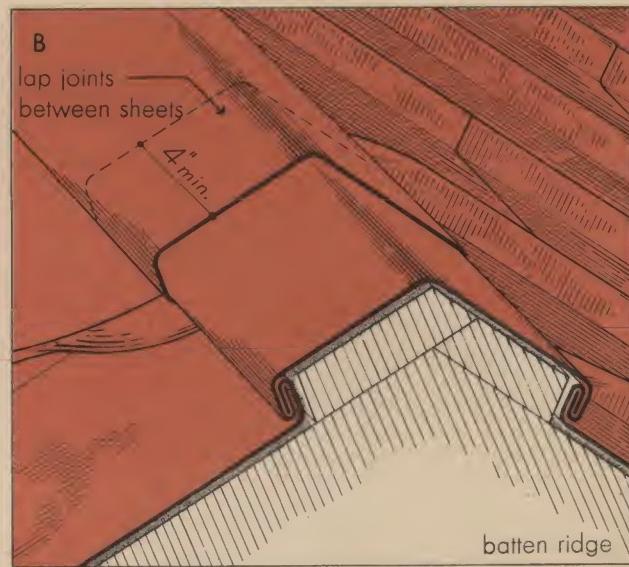
Fold  $1\frac{1}{2}$ " overhang of third surface to  $\frac{3}{4}$ " overhang of first surface at ridge.

Dress ridge lock down on first surface.

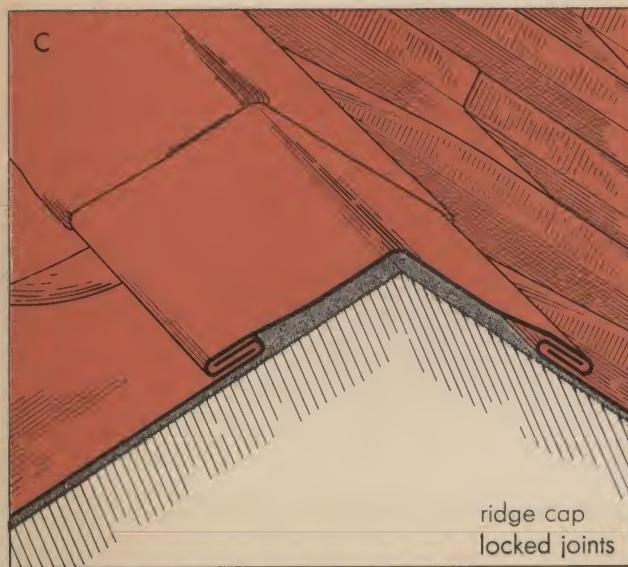
dotted arrow indicates natural flow of water



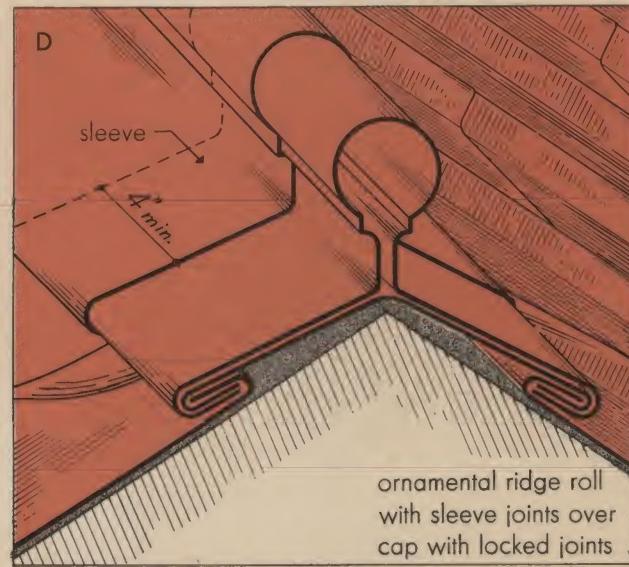
ridge with  
typical standing  
seam folded down



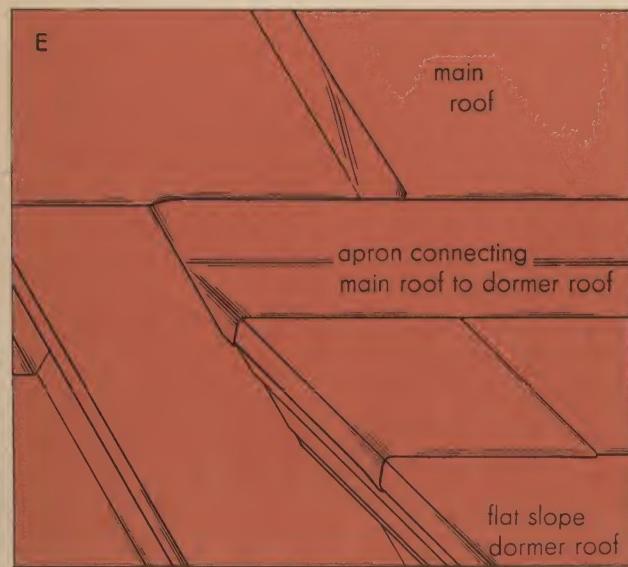
batten ridge



ridge cap  
locked joints



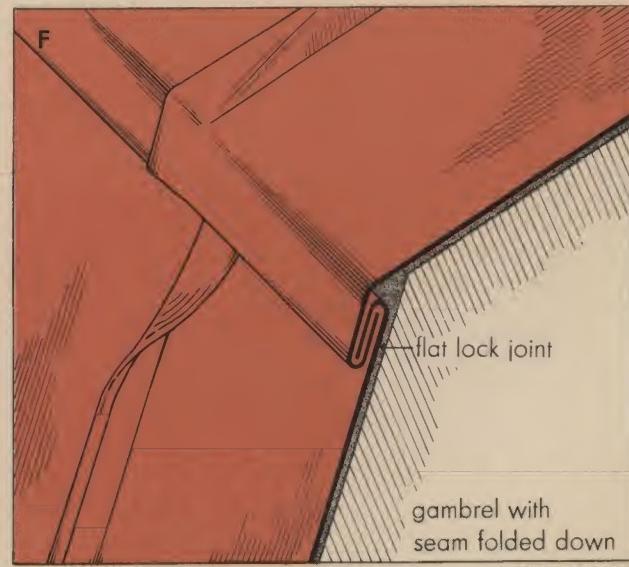
ornamental ridge roll  
with sleeve joints over  
cap with locked joints



main  
roof

apron connecting  
main roof to dormer roof

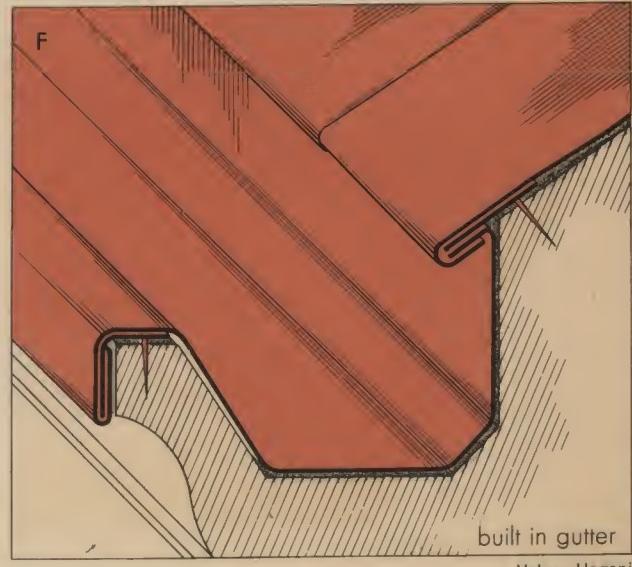
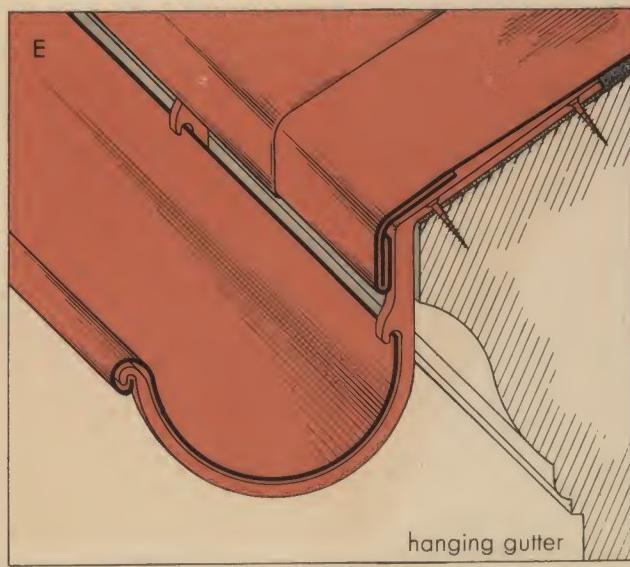
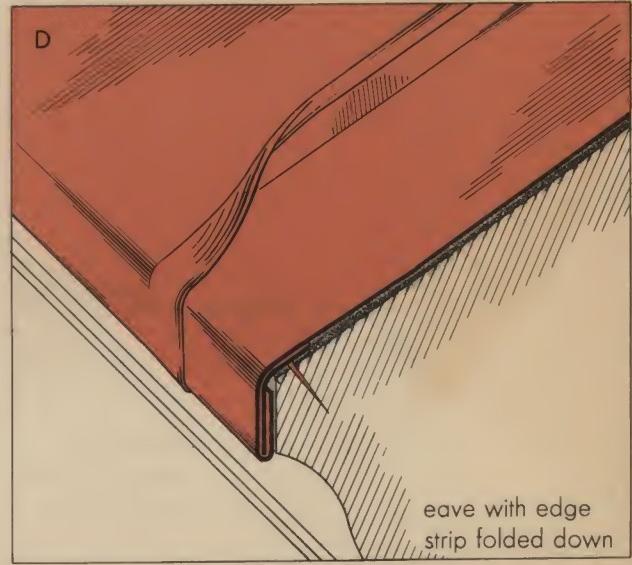
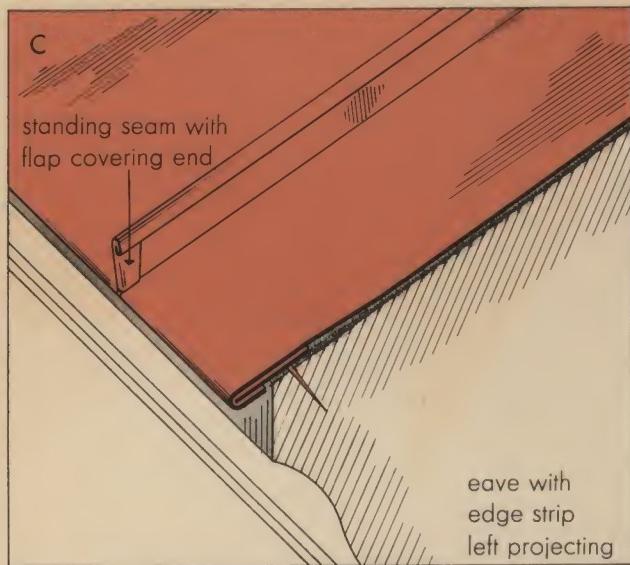
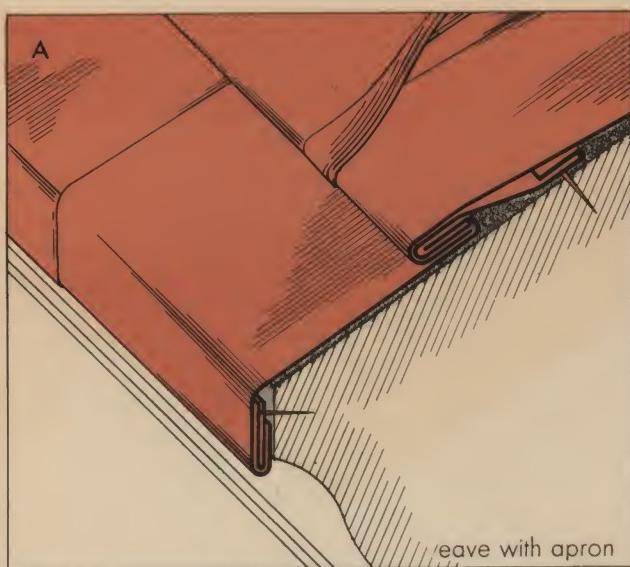
flat slope  
dormer roof

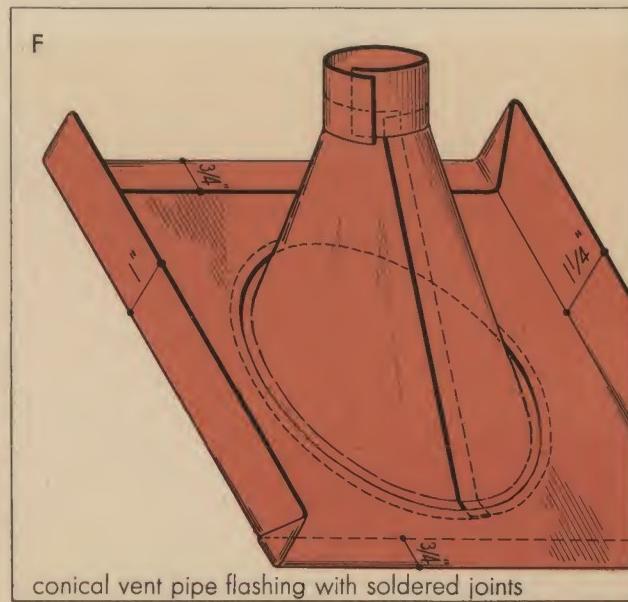
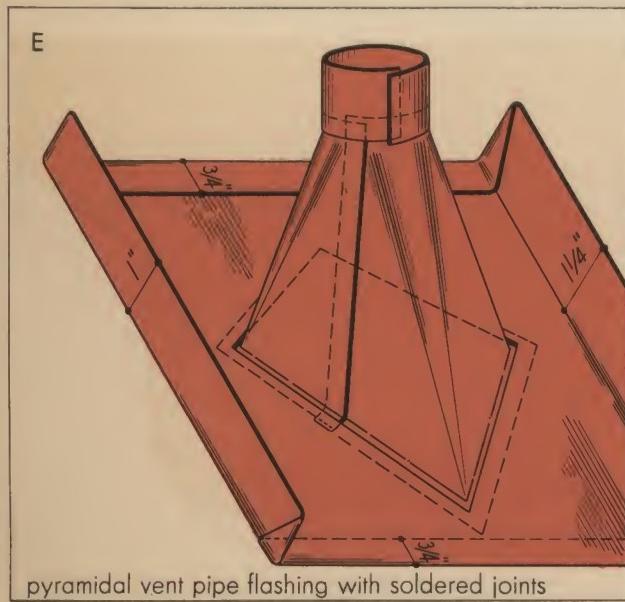
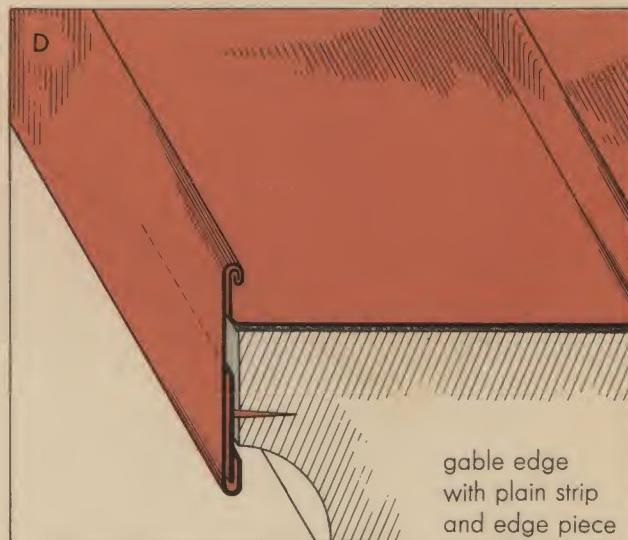
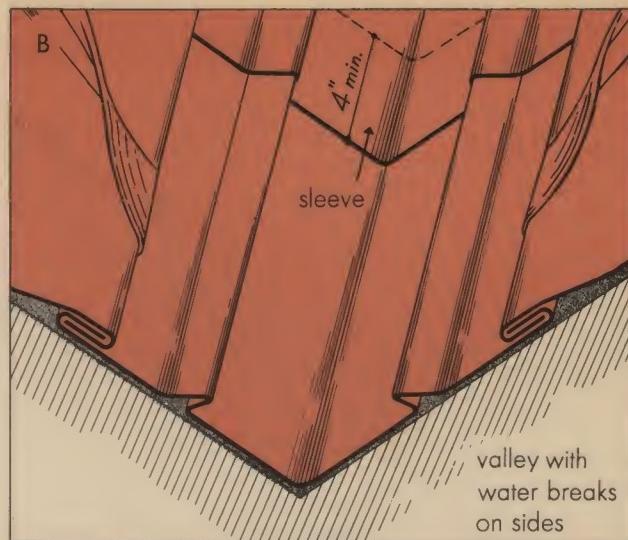
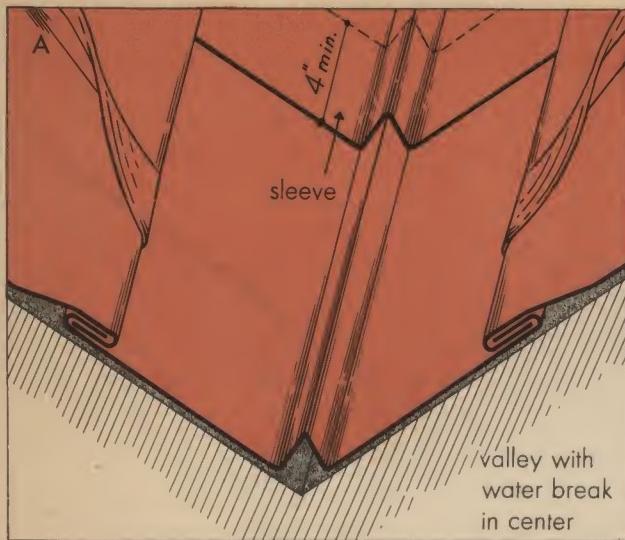


flat lock joint

gambrel with  
seam folded down

Vahan Hagopian





Vahan Hagopian

# THE AMERICAN BRASS COMPANY

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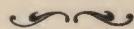
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